

**BY ORDER OF THE SECRETARY
OF THE AIR FORCE**



**AIR FORCE HANDBOOK 36-2235
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Personnel

***INFORMATION FOR DESIGNERS OF
INSTRUCTIONAL SYSTEMS FOR BASIC
MILITARY TRAINING***

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This volume provides information and guidance for applying the Instructional System Development (ISD) process described in AFMAN 36-2234 to Basic Military Training (BMT). This handbook is a guide for Air Force BMT curriculum developers. This handbook is intended for use alone without any requirements to read other ISD handbooks. Each handbook is developed for a particular community and has the appropriate language and applications to support it. It is recommended this handbook be used as a ready reference to locate information about the training development process to assist you in your job. You are not required to read this handbook from cover to cover, but may enter it at any desired phase of instruction where information is available to resolve your problem. You may use this handbook to design or revise BMT curriculum.

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Chapter 1

GENERAL INFORMATION

Overview

Introduction

This handbook serves as a guide for applying the Instructional Systems Development (ISD) process to the analysis, design, development, implementation, and evaluation of Basic Military Training (BMT) in the Air Force. It adheres to the policies of AFI 36-2201 and follows the principles and procedures outlined in AFMAN 36-2234.

Target audience for handbook

The handbook is specifically targeted at BMT curriculum developers; however, it can be used as a source of valuable information concerning ISD for instructors and managers alike. While it is designed as a "stand-alone" document, you should read and be familiar with AFI 36-2201 and AFMAN 36-2234.

Background

In the past, the Air Force ISD manual and handbook were focused on how ISD applied to technical training. There was little or no guidance on applying the ISD process to other areas such as BMT. The revised AFMAN 36-2234 provides the guidance and procedures necessary for applying the ISD process throughout the Air Force, regardless of the type of training or education being developed. Additional volumes of AFH 36-2235 provide specific guidance and procedures for applying ISD to aircrew training, acquisition, education, and technical training. Other volumes of AFH 36-2235 have been developed to cover applications of ISD in other areas such as computer-based training (CBT) selection and interactive courseware (ICW) decisions.

Purpose

This handbook provides specific information and guidance for using the instructional development process to maintain the BMT program. It provides information on the phases of the ISD process .

Goal of training

The goal of Air Force training is to develop performance-based, criterion-reference training that promotes transfer of learning from the training setting to the job. For a learning outcome to be achieved, training must be effective and efficient. Training is effective when it teaches objectives based on job performance requirements and efficient when it makes the best use of resources.

What is ISD?

ISD is a systematic, but flexible process used to analyze, design, develop, and implement training in an effective and cost-efficient manner. It is a comprehensive process that continuously strives to improve training programs through continuous evaluation. ISD ensures that:

Training needs are identified based on job performance requirements . What is being trained are those skills, knowledge, and attitudes most critical to job performance.

Standards of performance and objectives are identified that mimic the job environment as closely as possible.

The training method and media chosen support the subject matter and the target audience, and are time and cost efficient.

Trainees are evaluated on their ability to meet objectives that mirror job behaviors .

Training materials are evaluated on their ability to allow mastery of objectives.

Revisions to training are continuously identified and made to improve the training program.

Goal of ISD

The goal of ISD is to produce graduates who can perform their jobs after receiving training and to reduce overall costs of training by accurately identifying training requirements.

Why use ISD?

ISD is a set of comprehensive guidelines that serve as a blueprint for organizing and structuring the training development process. The Air Force uses the ISD process as a tool to ensure quality training programs are developed. This process enables continuous, measurable improvements in the quality of the training development process. There are a number of reasons why you should use the ISD process including:

ISD is a flexible system whose steps are not performed in a lock-step, linear fashion. While the ISD phases are performed sequentially, there is flexibility in ISD to go back and revisit data from a previous phase and use these data to make decisions regarding a later phase. This makes ISD a continuous, cyclical process that allows any phase to occur at any time. Whether revising training materials or developing them from scratch, this flexibility enables the ISD process to be applied.

Each phase of ISD is dependent upon another. The data collected and generated in one phase are used in subsequent phases. As you progress through the different phases of ISD, the processes and products of each phase are constantly evaluated against the training requirements identified in the previous phases, as well as principles of learning. Because each phase within ISD builds upon the previous phase, ISD serves as a system of checks and balances to ensure all training data are accounted for and nothing "falls through the cracks." This ensures what is being trained truly supports job performance. ISD emphasizes criterion-based training. The criteria are directly linked to performance requirements. Field representatives (e.g., supervisors, squadron commanders) identify training requirements, which training providers such as Air Education and Training Command (AETC) or other training organizations are then under "contract" to satisfy. The ISD process continually traces the relationship between job requirements and the training environment so the focus on actual job requirements is never lost.

ISD reduces the number of training program decisions that have to be made subjectively and, instead, allows decisions to be made based on reasonable conclusions which are based on carefully collected and analyzed data. More than one solution to a training problem may be identified, but the goal of ISD is to select the best solution.

Results of ISD

ISD results in quality training programs that produce:

Increased ability of trainees to perform on the job.

Training products that can be developed with less rework, less waste, and fewer errors.

Training products that are easy to use and maintain.

Chapter 2

INSTRUCTIONAL SYSTEMS DEVELOPMENT MODEL

Overview

Introduction

Designing, developing, and supporting the Basic Military Training (BMT) program require considerable time and effort on the part of curriculum developers. Curriculum developers are responsible for analyzing, designing, and developing effective and cost-efficient training. In addition, curriculum developers are responsible for evaluating and maintaining training materials to ensure their continued effectiveness in supporting Air Force doctrine, philosophy, and values.

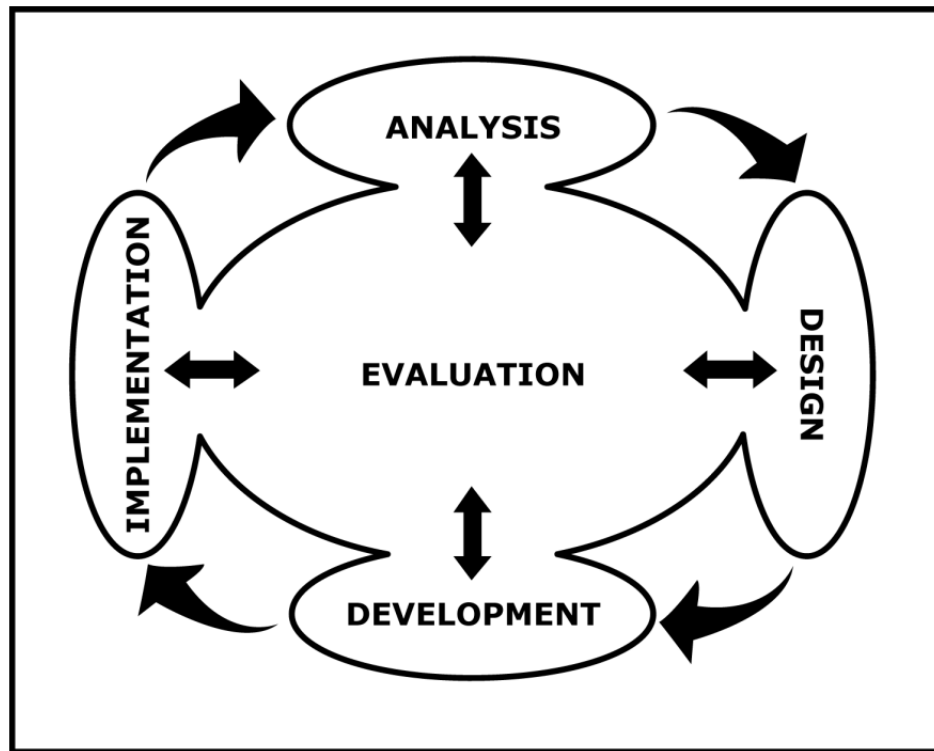
Air Force ISD model

The ISD model is designed to provide simplicity and flexibility so that curriculum developers with varying levels of expertise can understand the model and use it to develop effective, cost-efficient training programs. The model further supports the flexibility that curriculum developers have to enter or reenter the various stages of the process as necessary to create or revise training materials. The nature and scope of the development, update, or revision effort determine the entry or reentry into a particular stage of the process.

ISD phases

Figure 1 shows the phases in the systems approach, which are analysis, design, development, and implementation, with evaluation activities integrated into each phase of the process. All phases of the model depend on each of the other phases. Evaluation is shown as the central feedback "network" for the total system. The Evaluation Phase fosters continuous quality improvement of the training program by reviewing the data generated in each phase to ensure they meet the needs of the target audience.

Figure 1 ISD Phases



The instructional development process, which the model summarizes, calls for curriculum developers to :

- Analyze and determine what training is needed.
- Design training to meet the need.
- Develop training materials that support job requirements.
- Support implementation of the training program.
- Evaluate all phases of training throughout the ISD process.

Analysis phase	Any training development effort is predicated upon careful and thorough planning. If a training need is identified, in the Analysis Phase curriculum developers will determine the common tasks, knowledge, and attitudes that all airmen must possess for successful job performance. In this phase, curriculum developers will analyze knowledge and attitudes through conduct of an educational analysis. If a task was identified as a deficiency in job performance, curriculum developers will conduct a task analysis to break down the tasks into subtasks (performance steps), conditions, and standards. Curriculum developers will further conduct a learning analysis to establish learning outcomes and update the course training standard to reflect any revisions to BMT.
Design phase	During the Design Phase, curriculum developers build the framework from which training is developed including the development of learning objectives and tests and the selection of media. Existing training materials are reviewed during this phase to determine their applicability to the specific instruction under development. What is done in this phase plays a key role in determining the effectiveness and cost-efficiency of the training that will be developed in the next phase of the ISD process.
Development phase	The Development Phase builds upon the data gathered during the Analysis and Design Phases. After objectives, tests, and instructional strategies have been determined, the training materials are fleshed out to develop lesson plans and accompanying trainee materials. Media are further developed. During this phase, curriculum developers validate the training materials to identify any deficiencies that must be corrected. Validation includes technical accuracy reviews (formative evaluation) and operational field tryouts (summative evaluation) .
Implementation phase	In the Implementation Phase, the training program is fielded under operational conditions. At this point, after analysis, design, and development are completed, the curriculum developer's role is limited to supporting delivery of the training. The curriculum developer is also responsible for evaluating trainee performance and reporting evaluation results during implementation (these functions will be covered in the Evaluation Phase chapter).

Evaluation phase

Evaluation is a continuous process beginning during the Analysis Phase and continuing throughout the life cycle of the training program. The Evaluation Phase of ISD measures training program effectiveness and efficiency. Evaluation consists of formative and summative evaluations, which are covered in [Chapter 6](#), Development Phase. It also consists of operational evaluation, which supports periodic internal and external evaluation of the training program during the Implementation Phase.

Objectives

The objectives of this chapter are contained in five sections that provide a brief overview of the ISD process.

Section	Title	Page
A	Analysis	12
B	Design	13
C	Development	15
D	Implementation	16
E	Evaluation	17

Section A Analysis

What it is

In the Analysis Phase, job requirements common to all airmen are identified. These job requirements include:

Tasks
Knowledge
Attitudes

Why do it?

Analysis is necessary to define job performance requirements. This phase is important because it ensures you get the right training for the stated need .

Outcomes

Proper analysis results in:

Tasks defining job performance
Knowledge and attitudes required of successful job performance
Job tasks and knowledge translated into behaviors performed in the training environment
Learning outcomes in terms of types of learning involved and level of learning desired
Updated Course Training Standard (CTS)
Resource requirements/constraints

Where to read about it

Details of the Analysis Phase of ISD are contained in [Chapter 4](#). Specific topics are listed below.

Topic	Page
Conduct Educational Analysis	46
Conduct Task Analysis	48
Conduct Learning Analysis	57
Revise Course Training Standard	63
Analyze Resource Requirements/Constraints	65

Section B

Design

What it is

The Design Phase builds the structure or foundation of a training program. In the Analysis Phase, job requirements in the form of tasks, knowledge, and attitudes were identified. The Design Phase will build upon those requirements to translate them into behaviors performed in the training environment.

Why do it?

The Design Phase is important because it establishes the objectives of training. The goal of this phase is to simulate as closely as possible the real-world job conditions within the training environment. The more closely the training conditions are to the real world, the more likely it is that the trainee will transfer the learning to the job. The curriculum developer builds into the instruction those conditions that are necessary for effective and efficient learning to occur.

Outcomes

Proper design results in:

Grouped and sequenced objectives reflecting job performance requirements.

Tests that measure the objectives.

Training methods, media, and strategies to deliver the training.

A Course Training Plan (CTP) that defines instructional and resource requirements in support of the course.

**Where to read
about it**

The details of the Design Phase of ISD are contained in [Chapter 5](#).
Specific topics are listed below.

Topic	Page
Develop Objectives	73
Develop Tests	87
Review Existing Materials	105
Select Training Method and Media	107
Update Course Chart	123
Update Course Training Plan	128

Section C

Development

What it is

In the Design Phase, objectives, tests, strategies, and media were determined. The Development Phase builds on the information gathered during the Design Phase by fleshing out lesson plans that detail the instructional content. During ISD development you develop, validate, and revise the training.

Why do it?

It is in the Development Phase that training materials and media are developed.

Outcomes

Development results in validated:

- Plans of Instruction (POI)
- Media
- Trainee materials

Where to read about it

The details of the Development Phase of ISD are contained in [Chapter 6](#). Specific topics are listed below.

Topic	Page
Prepare Plan of Instruction	138
Develop Media	157
Prepare Trainee Materials	160
Validate Training Materials	162
Finalize Training Materials	172

Section D Implementation

What it is In the Implementation Phase, the training program is implemented and the course becomes operational.

Why do it? It is in the Implementation Phase that the work completed in the Analysis, Design, and Development Phases comes to fruition with delivery of the training program to the trainee population.

Outcomes Successfully implemented training results in graduates who meet job performance requirements.

Where to read about it The details of the Implementation Phase of ISD are contained in [Chapter 7](#). Specific topics are listed below.

Topic	Page
Support Training Program Functions	179
Monitor and Refine Training	186

Section E

Evaluation

What it is Evaluation measures the quality, effectiveness, and efficiency of a training program. It is a continuous process performed in all phases of ISD and throughout the life cycle of the training program. Evaluation answers the questions :

Is the training program effective and cost-efficient?
Are quality products being developed?
How well are course graduates performing on the job?
How can the training program be improved?

Why do it? Evaluation improves the quality of the ISD process and products while producing graduates who can meet job performance requirements.

Outcomes Evaluation provides data on the quality of the ISD process and products and identifies revisions that should be made to improve the program. Evaluation further assesses trainee performance and whether graduates are meeting job performance requirements .

Where to read about it The details of the Evaluation Phase of ISD are contained in [Chapter 8](#). Specific topics are listed below .

Topic	Page
Types of Evaluation	190
Collect Evaluation Data	193
Analyze Evaluation Results	211
Report Evaluation Results	219

Chapter 3

PLANNING

Overview

Introduction

Effective and cost-efficient training must be planned. Planning is a key element in the management of the overall training program as well as in the ISD process itself. Inadequate planning is costly. Training must be planned so that resources are not spent on things that do not need to be trained. Planning ensures what is being trained are those knowledge, skills, and attitudes most critical to successful job performance .

Objectives

The objectives of this chapter are contained in four sections.

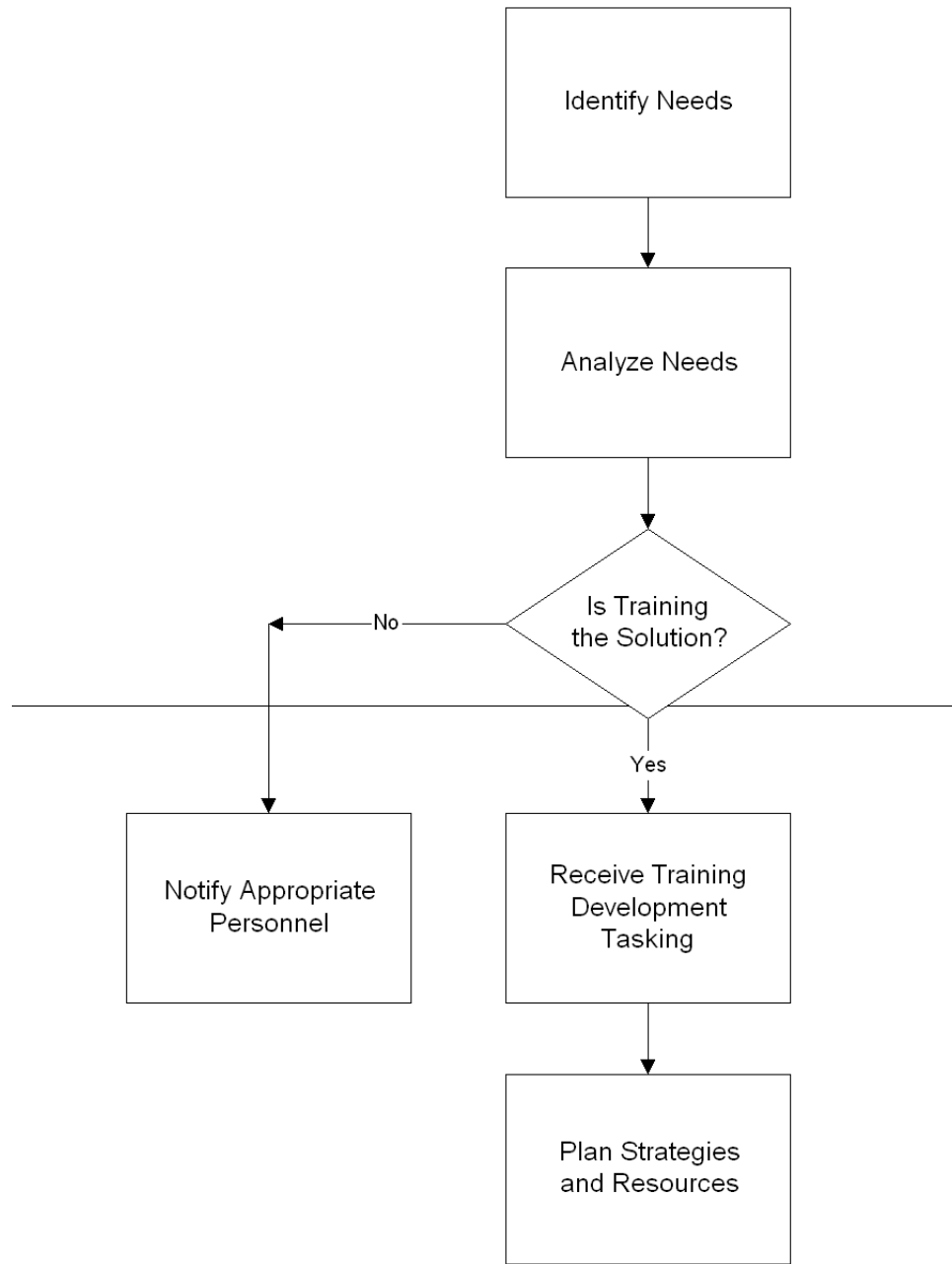
Section	Title	Page
A	Identify Needs	20
B	Analyze Needs	23
C	Receive Training Development Tasking	34
D	Plan Strategies and Resources	36

**Planning process
flowchart**

The Planning Phase is depicted in the flowchart (Figure 2) below as a quick reminder of the activities involved in planning an ISD project.

Figure 2 Planning Process Flowchart

Planning



Section A

Identify Needs

Introduction

In the Planning Phase of ISD, needs are identified that trigger a requirement for training. BMT curriculum developers are not responsible for identifying needs. Training needs are generated by Air Force operational forces. There are a couple of avenues for identifying and communicating these needs to BMT curriculum developers.

Out of cycle requirements

Training needs may be initiated by Out of Cycle requirements identified by higher headquarters or operational forces. These requirements may be identified at any time and subsequent tasking for training development will be given to BMT curriculum developers by higher headquarter elements.

BMT Review

The training content of BMT is determined by members of the BMT Review Committee. Ideally, it is the role of these committee members to identify needs.

BMT Review committee members

Committee members include senior officers from:

Headquarters, Air Force
Headquarters Air Education and Training Command
2nd Air Force
37th Training Wing

In addition, members include:

Chief Master Sergeant of the Air Force
Command Chief Master Sergeants

Purpose of BMT Review Committee

The purpose of the BMT Review Committee is to determine the training requirements for BMT based on Air Force operational requirements. The committee determines the requirements for BMT graduate performance, military training, military studies, initial enlisted training, curriculum course standards, and other items of special interest based on the current and future needs of the Air Force. Committee members, in particular CMSgts, are in tune with the needs of the operational forces due to their day-to-day contact with airmen and their diverse missions. As such, they are in a position to identify a deficiency in performance or a need for training. The committee ensures that all BMT requirements are rationally based and validated to satisfy Air Force operational requirements.

Training needs assessment (TNA)

A training needs assessment (TNA) is the process of identifying a deficiency or gap between current performance and desired performance. A deficiency exists when the actual performance level is below the optimal level of performance that has been established. The deficiency or gap equates to a need. A TNA is ideally conducted by the BMT Review Committee prior to attending the review.

What signals a training need?

Needs may come from several different sources. Many needs are identified because personnel are not meeting job performance requirements. Other needs may be identified by a philosophical change in the Air Force mission that requires attitudinal changes. The following may signal a need that should be trained in BMT:

- Changes in Air Force doctrine, mission, or policy make existing training obsolete or cause new training to be required.
- Acquisition of new technology or equipment.
- Instruction in a topic is mandated from higher headquarters.
- Changes in fundamental Air Force goals and objectives require a change in attitudes.
- Changes in standard of performance.
- Evaluations of mission readiness.
- Accident board findings.

**When should
needs be
identified ?**

Ideally, needs should be identified before any other planning takes place. This should be done prior to attending the BMT Review or submitting an Out of Cycle requirement.

Having this completed prior to the BMT Review will allow an agenda to be developed so focused attention can be brought to specific needs or topics. It will allow committee members to review BMT curriculum and other BMT-related statistical data to make informed decisions regarding the validation of existing training materials as well as the inclusion of additional training .

Section B

Analyze Needs

Introduction

Once needs are identified and communicated by BMT Review committee members or by higher headquarters through an Out of Cycle requirement, a needs analysis is conducted to determine what, if any, training is needed. BMT curriculum developers are responsible for conducting this analysis.

Needs analysis

Needs analysis is the process of analyzing a need, problem, or deficiency in order to determine if the solution is training or non-training related. This includes refining the need or clarifying whether the need is represented by a task, knowledge, or attitude. If a problem is caused by a lack of skills, knowledge, or attitude to accomplish a job, then the problem is training-related.

When is a needs analysis conducted ?

Needs analysis must be done before any other planning occurs or additional resources are committed to a project. A good assessment will determine whether the need can be satisfied with training or may require some other solution such as a policy change, new procedures, better working conditions, or others that do not require a training solution. BMT committee members will arrive at the BMT Review with an agenda including any needs that have been identified. Once a need has been identified, it can be further analyzed. Ideally, BMT curriculum developers will assist in guiding a needs analysis during the BMT Review. Committee members should ensure the problem is training-related before they task BMT curriculum developers with planning a training solution.

If needs are analyzed stemming from an Out of Cycle requirement, BMT curriculum developers will conduct a needs analysis on their own.

BMT mission

The mission of BMT encompasses core values, an appreciation for teamwork, discipline, a basic understanding of the Air Force, and basic warrior skills. At the heart of this mission is the requirement to train the common skills, knowledge, and attitudes that all airmen must possess regardless of duty assignment or duty station. Within BMT, there is limited training time to devote to these topics. The BMT curriculum and schedule have been carefully developed to focus on the "must know" information required to adequately cover these topics. Any additions to the BMT curriculum must be carefully scrutinized to ensure they support the mission of BMT, are required learning of all airmen, and are in the best interests of the welfare of the individual airmen as well as the overall mission of the Air Force.

Participation in BMT Reviews

BMT curriculum developers participate in BMT Reviews by answering questions about curriculum and by providing briefings on curriculum initiatives, changes in programs, and survey results from data collected. BMT curriculum developers play an important role by assisting in data gathering and focusing the efforts of the committee on the "must know" information common to all airmen.

Stages of needs analysis

In general, a needs analysis consists of six stages.

Stage	Activity
1	Define purpose.
2	Identify additional data sources.
3	Collect data.
4	Analyze data.
5	Justify training.
6	Document findings and make recommendations .

Stage 1:
Define purpose

In the initial stage of needs analysis, you need to know:

Who is involved, who wants the problem solved, who needs the problem solved, who is causing the problem, etc.

Nature of the problem.

Where to get the information.

Questions to ask

BMT curriculum developers should ask questions to gather additional information on why the requirement exists or what brought about the need for the skill or attitude change. This will enable you to tailor the curriculum to target the actual need.

Topic of Discussion	Example Questions
Philosophical / Doctrinal Change (attitude, system, equipment, uniform, etc.)	What is the nature of the change? What is the purpose of the change? Why is it changing? What caused it to change?

Stage 2:
Identify additional data sources

Next, identify possible sources of data. The following sources can assist you in analyzing needs to determine if they are training-related:

IG/standard evaluation reports
Technical data
Job descriptions
Job performance requirements
Records
Reports
BMT curriculum and statistics

Questions to ask

BMT curriculum developers should ask questions to identify what resources exist that they can tap into for additional information and insight into the subject matter.

Topics of Discussion	Example Questions
Training	Is there Air Force doctrine supporting the requirement?
Subject Matter	Are there resources/ documentation pertaining to the subject matter from other services or organizations?

**Stage 3:
Collect data**

Collect data through:

Group meetings
Interviews
Observations (if possible)
Analyses of work samples and related documents

Questions to ask

BMT curriculum developers should ask questions to determine if the performance gap is caused by the airmen's lack of required knowledge, skill, or attitude. The focus of data collection is on determining whether the need can be satisfied through training or some other mechanism (managerial, policy change, etc.)

**Questions to ask
(Continued)**

Topics of Discussion	Example Questions
Target Audience	Is the need something that must be acquired by all airmen? Is the problem gender oriented?
Training	Was a specific type of training requested? Are the identified training needs current ?
Need	Is the need supportive of a task performed on the job ? Is the need supportive of a knowledge or attitude? If so, does the knowledge or attitude support a larger task performed on the job ? Will job degradation occur if the subject is not taught ?

**Knowledge,
attitudes, tasks**

To collect data regarding whether a need requires training to satisfy it, you must understand the differences among knowledge, attitudes, and tasks. A major goal of BMT is to instill the basic core values, discipline, and attitudes inherent in all enlisted members of the Air Force. Some of these goals will be measured by tasks performed on the job, while others will be defined by knowledge or attitudes that must be acquired as part of the job .

**What is a
knowledge ?**

Knowledge is information required to develop the skills and attitudes for effective accomplishment of a step, task, or job. Knowledge involves storing and recalling information such as names, labels, facts, principles, nomenclature, steps, etc.

Examples of knowledge

Military Studies such as Military Entitlements, Military Citizenship, Staff Referral Agencies, etc., generally consist of knowledge that must be acquired rather than tasks that must be performed. Other examples of knowledge are:

- Code of conduct
- Sexually transmitted diseases
- Human relations
- Environmental awareness
- Educational opportunities

What is an attitude?

An attitude is a feeling or emotion toward a fact or state. One of the goals of BMT is to instill attitudes among trainees that support the Air Force vision for what is needed to protect ideals, security, and prosperity of our nation. Military Studies such as Ethics and Human Relations seek to impart a pervasive attitude that should be held universally by all airmen. The training of these topics also seeks to impart knowledge regarding Air Force policy and behaviors expected of all airmen. Attitudes must support Air Force philosophy and policies for conduct. An attitude is often what is needed to achieve desired outcomes.

Examples of attitudes

- Esprit de corps
- Discipline
- Military bearing
- Professionalism

What is a task?

A task is an observable and measurable unit of work activity or operation that forms a significant part of a job. It constitutes a logical and necessary step in performance, and has a logical beginning and end. Most tasks in the Air Force are procedural, consisting of a series of steps performed to produce a specific outcome. For example, Combat Arms Training is defined by tasks performed on the job such as firing a rifle.

Task criteria	<p>Understanding the criteria for a task will help identify tasks during the needs analysis.</p> <p>A task is a group of related physical or mental activities directed toward a goal.</p> <p>A task, when performed, results in a meaningful product or process .</p> <p>A task has a definite beginning and end.</p> <p>A task involves people interacting with equipment, media, or other items.</p> <p>A task is directly or indirectly observable.</p> <p>A task is measurable.</p>
Examples of tasks	<p>Perform squadron/dormitory maintenance.</p> <p>Render courtesies.</p> <p>Perform individual drill movements.</p> <p>Meet fitness/weight standards.</p> <p>Perform field protection.</p> <p>Erect TEMPER tent.</p> <p>Construct defensive fighting position.</p>
Stage 4: Analyze data	<p>After data collection, analyze the data collected to:</p> <p>Determine if the performance gap is caused by the airmen's lack of required skills, knowledge, or attitude.</p> <p>Confirm the accuracy and quality of the data gathered by:</p> <p>Having individuals who provided the information review the data and analysis results.</p> <p>Verifying the results of the analysis. If the problem is not training-related, committee members should notify appropriate personnel to ensure the problem is appropriately addressed via policy change or some other avenue that does not require training.</p>

Stage 5:
Justify training

Before making a training recommendation, you must ensure training is justified. In this step, it may be necessary for curriculum developers to review the BMT Course Training Plan and curriculum with committee members to :

Determine if existing BMT resources (instructors, support staff, facilities, equipment) can support the training need.

Determine what impact the addition of new training will make to the current schedule.

Questions to ask

BMT curriculum developers should guide the discussion of justification of training through the questions they ask. Some of these questions may not be able to be answered at this stage in the ISD process and may, instead, be answered in the Analysis Phase. However, you should try to get answers to as many questions as possible before the tasking is handed down to you to develop training.

Question	Discussion
Does every airman perform the task or need to possess the knowledge or attitude?	Review the BMT mission statement to see if the task/skill/requirement is supported by the mission statement. The BMT environment is unique in that training must support the acquisition of knowledge, skills, and attitudes that all airmen must possess to perform their jobs, regardless of Air Force Specialty Code (AFSC). For example, it is a requirement that every airman know the Air Force policy on sexual harassment. If the gap between actual and desired performance is something that must be introduced and reinforced at an entry level, it may be an appropriate candidate for BMT.

**Questions to ask
(Continued)**

Question	Discussion
How critical is the need?	The need will be represented by a task performed on the job or a knowledge or attitude that must be acquired as part of the job. Determine if the need is critical to mission accomplishment or critical to acquisition of an Air Force ideal or philosophy. For example, knowledge of the Code of Conduct is critical to the overall job of an airman.
How frequently is the task performed or the knowledge or attitude exhibited?	Determine how often the task is performed on the job or how often the knowledge or attitude must be exhibited on the job. If it is often, training is warranted. For example, customs and courtesies are a pervasive construct of Air Force/military life .
Is there enough time in the current BMT schedule to teach the task, knowledge, or attitude adequately?	It may be possible to train the task, knowledge, or attitude adequately without the addition of training time devoted to the topic. For example, if a need is identified to increase awareness of tobacco and gum disease, the requirement may be satisfied through distribution of informational pamphlets rather than through lecture-based training.
Is it economical to teach the task, knowledge, or attitude?	Funding should not drive training, however, it should be considered at this stage of planning.

**Questions to ask
(Continued)**

Question	Discussion
Are there resources available (e.g., existing facilities, personnel, equipment) to support teaching the task, knowledge, or attitude?	Resources should not drive training, however, they must be considered at this stage of planning.

**Stage 6:
Document findings
and recommend
solution s**

The needs analysis will generate a requirement communicated by a BMT Review or Out of Cycle requirement. After the accuracy of data and analysis results have been verified:

Document the problem or need.
Identify the cause.
Recommend solutions to the problem.

**When to
recommend a
training solution**

Because training is expensive, a training solution should only be recommended when:

All airmen perform the task or must possess the knowledge or attitude.
The task is highly critical i.e., inadequate performance will result in mission degradation, injury or loss of life, damage to equipment, etc.
The task is performed frequently or the knowledge or attitude are pervasive requirements.

**Additional
recommendations**

By participating in BMT Reviews, BMT curriculum developers play an important role in focusing the discussion on how the training need may be satisfied within the existing BMT curriculum. If possible, at this stage in the ISD process, BMT curriculum developers should:

Recommend where the training will fit into the current schedule.

Identify where training already exists to meet the requirement.

Identify where resources will be impacted and possible resource constraints to implementing the proposed training.

Recommend appropriate delivery methods.

Recommend possible alternatives.

Section C

Receive Training Development Tasking

Introduction

As a BMT curriculum developer, you are responsible for developing and maintaining BMT curriculum. The ISD process starts with a training need; it comes to you in the form of a formal request to develop or revise training. Your tasking for curriculum development or revision comes from the BMT Review or an Out of Cycle requirement from higher headquarters. In addition, a revision to training materials may be initiated by a BMT curriculum developer as a result of operational evaluation.

What is a tasking?

A tasking is any formal request to develop new training or revise existing training.

Sources of tasking

The tasking to develop training may come from any number of sources. Examples are:

External

- BMT Review
- Out of Cycle requirement

Internal

- Evaluation of BMT curriculum including:
 - Self-inspection/observation
 - Trainee critique
 - Instructor critique
 - Test item analysis

Determine if revision to existing instruction or new instruction

Review current BMT curriculum to determine if the effort will support revision to existing materials or will require new training development. This will enable you to determine which phase of ISD you need to enter. Some examples follow.

**Determine if
revision to existing
instruction or new
instruction
(Continued)**

If the work effort involves:	Enter ISD at this phase:
New training development	Analysis
Revision of job tasks	Analysis
Revision of Course Training Standards (CTS)	Analysis
Revision of objectives	Design
Revision of test items	Design
Revision of media	Design
Revision of Course Chart	Design
Revision of lesson plans	Development
Revision of resources (Course Training Plan)	Development
Instructor performance	Implementation

Section D

Plan Strategies and Resources

Introduction

Once it has been determined that training is needed, strategies must be planned and resources must be identified for developing and implementing the training. This may be early in the ISD process to nail down all of your resources, but you should start now. This effort will differ greatly if the requirement is to develop new training or it is to revise existing training.

What are strategies?

Strategies are required to determine how both training development and training implementation will occur. Strategies provide the "roadmap" for training development and implementation as well as the management of these two efforts. Strategies will differ if the effort is one of development or revision. For example, if training materials will be added, it is necessary to determine where the new training will be taught within the existing course schedule. Strategies identify and document:

- What must be done and the resources required to do it.
- Who is responsible for doing it.
- How it is going to be done.
- When it needs to be completed.

What are resources?

The most critical element in ISD is resources. Throughout the entire ISD process, resources will always be your major concern. In the planning stages of ISD, your responsibility is to identify the resource requirements to revise, design, develop, implement, and continue to maintain a training program. Resources include:

- Personnel Resources – curriculum developers, instructors
- Information Resources - publications, regulations, existing curriculum
- Time – development time, course time
- Equipment – training, support
- Facilities – classroom, drill pad, range, field setting

Purpose of identifying resources

The purpose of identifying resources early in the ISD process is to ensure you have the resources you need in place at every phase as you progress through the ISD process. You cannot do a good job unless you have the necessary resources at the right time. Some resources may require a long lead-time to secure them so it is important to start planning early. For example, personnel needed must have sufficient time to schedule their work on the project.

Personnel resources

At this point in the Planning Phase, you must consider how many of the following people you need to support development of the materials as well as implementation:

Curriculum developers
Subject matter experts (SME)
Instructors
Support personnel

Sample Questions for Identifying Personnel Resources
How many curriculum developers will be needed?
Are SMEs required? If so, how many and for what period of time?
What type and how many people will be needed for support activities?
Will other organizations be needed to develop the training materials ?
How many instructors will be required?
Are there any personnel constraints? If so, what are they?

**Personnel
resources - scope
and level of project**

The scope and level of the ISD project will determine personnel requirements. For example:

Developing new training from scratch will normally require more curriculum developers than revising training in the BMT curriculum .

Developing or revising training supporting a specific subject matter may require SMEs to provide technical expertise on the subject matter. It is possible that other agencies [e.g., Legal, Military Equal Opportunity (MEO), Public Health, Readiness, Medical] will develop the training materials. You must coordinate the effort with them to ensure you get the materials needed to support implementation of the training.

Developing a course using interactive courseware (ICW) will require more personnel using different skills, such as programmers and graphic artists, than are required for print-based materials. Levels of complexity within ICW will impact personnel requirements since the more complex the material, the more time it takes to design and develop.

**Information
resources**

It is important to identify sources of information for developing or revising curriculum. Sources include:

Mission requirements
Directives
System specifications
Technical data
Legal, MEO, Public Health, Readiness, Medical
Existing materials from other services or government agencies

**Additional
resources**

There are additional resources, including equipment, facilities, time, and funding, that you must consider. For example, in planning the development effort, you must consider how many computers you will need. In planning implementation, you must consider what equipment will be needed to support training.

**Additional
resources
(Continued)**

Sample Questions for Identifying Resources	
Equipment	<p>What and how much training equipment will be needed?</p> <p>What and how much support equipment will be needed?</p> <p>Are there any equipment constraints? If so, what are they?</p>
Facilities	<p>What type of facilities will be needed to conduct or support training ?</p> <p>Will a new facility be required or can an existing facility be used?</p> <p>If an existing facility is used, will it require modification?</p> <p>Are there any facility constraints? If so, what are they?</p>
Time	<p>Are the identified training needs current?</p> <p>How long will it take to design and develop the course?</p> <p>How long will the course be?</p> <p>How much lead time is needed to procure equipment, facilities, and personnel?</p> <p>Are there any time constraints? If so, what are they?</p>
Funding	<p>What are the funding requirements to obtain the equipment, facilities, and personnel you need to develop and implement program ?</p> <p>What are the life cycle costs to maintain the program?</p>

**Resource
constraints**

You will seldom have all the resources you need or would like to have to develop and implement training. Therefore, you will probably be working under some kind of resource constraint.

How do you deal with constraints? The table below suggests some alternatives to work around resource constraints. Ensure that work-arounds are temporary and there is a permanent resource solution.

How do you deal with constraints?

Resource Constraints and Possible Alternatives	
Personnel Resources	<p>Borrow SMEs to assist in developing the training curriculum.</p> <p>Use curriculum developers from other organizations (e.g., Medical, Public Health, Readiness) .</p> <p>Select different delivery methods or media.</p>
Information Resources	<p>Interview SMEs if no informational resources exist.</p>
Time	<p>Use additional personnel to design and develop training.</p> <p>Select different delivery methods and media.</p>
Equipment	<p>Borrow equipment from other training organizations.</p> <p>Share equipment with other training organizations.</p> <p>Plan training to use equipment on shifts.</p> <p>Select different delivery methods or media.</p>
Facilities	<p>Use temporary facilities.</p> <p>Modify existing facilities to support need.</p> <p>Share facilities with other training organizations.</p> <p>Plan training to use facilities on shifts.</p> <p>Select different delivery methods or media.</p>

Updating resource requirements

It is difficult to determine all of your resource requirements this early in the ISD process. As you progress through the phases of ISD, you will continually update your resource requirements as you gather additional data and as resources become available or unavailable.

Chapter 4

ANALYSIS

Overview

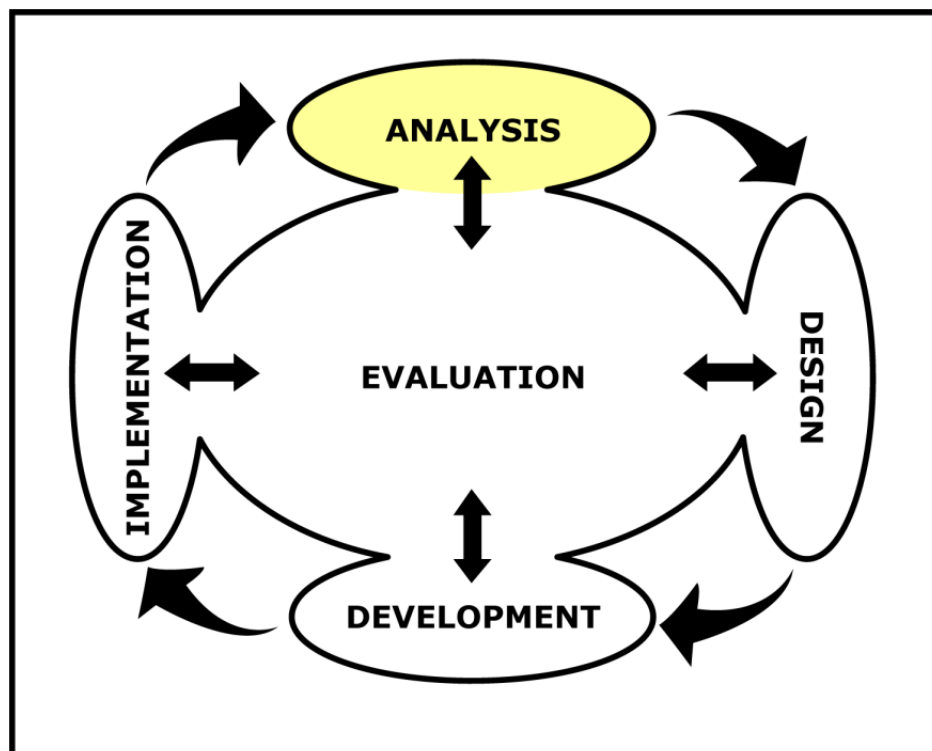
Introduction

Before entering the ISD process, make sure adequate planning and preparation have been accomplished. If the needs analysis conducted in the Planning Phase confirmed a training need, you will usually begin instructional development at the Analysis Phase. However, in some cases, such as the revision to existing BMT curriculum, you may be able to enter directly into the Design or Development Phases of ISD. This chapter of the handbook will address the tasks you perform in the Analysis Phase of ISD with an emphasis on the steps required to create new training materials rather than revise existing materials.

Where are you in the process?

An ISD model with the Analysis Phase highlighted is presented in Figure 3 to help you visualize where you are in the ISD process.

Figure 3 Analysis Phase



Determine type of analysis

The nature and scope of each ISD project will be determined by the assessed training deficiency/requirement established by operational forces or higher headquarters element.

Focus of BMT

To determine the type of analysis to perform, you must first understand the focus of BMT. The primary focus of BMT is to transform civilian recruits into airmen warriors whose behavior is consistent with the standards, values, and beliefs of the Air Force. To accomplish these objectives, tasks, knowledge, and attitudes must be trained and instilled during BMT. To do this, BMT:

Provides the foundation for understanding and internalizing Air Force core values.

Instills an appreciation for teamwork and working with people from diverse walks of life.

Instills a sense of discipline so that trainees follow orders and do what is expected of them when unsupervised.

Provides a basic understanding of the Air Force and its history, structure, and customs.

Instills the importance of meeting Air Force fitness, weight, and image standards.

Prepares airmen for war through a series of lectures and practical exercises in job-realistic environments.

Job analysis

In the Analysis Phase of ISD, a job analysis is most commonly conducted. Jobs are analyzed to determine what tasks are performed on the job. All trainees entering the Air Force at the enlisted level attend BMT. As such, the target audience for BMT is not composed of a single job, but of any and all jobs enlisted Air Force personnel may hold. Therefore, a job analysis is not the purview of BMT curriculum developers.

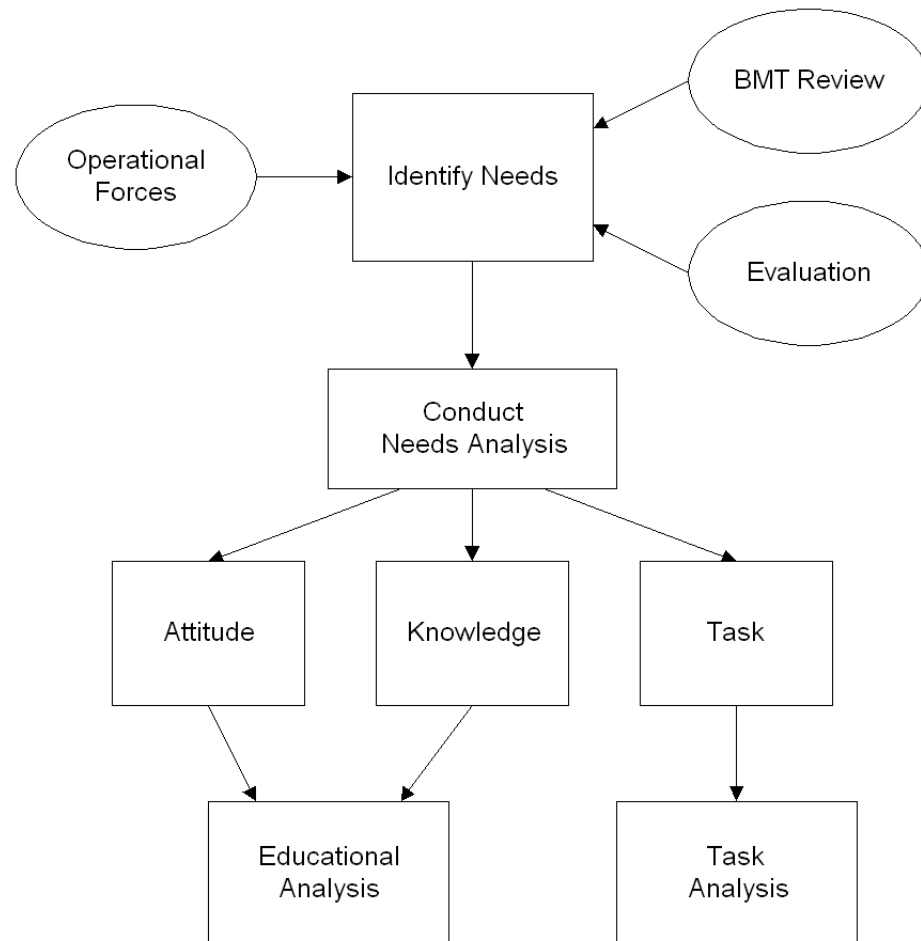
Educational analysis

If a need was identified during the Planning Phase that did not support a task and, instead, supported a knowledge or attitude, you will begin in the Analysis Phase using a process called educational analysis (see Figure 4). An educational analysis is the process of reviewing educational requirements and developing educational goals.

Task analysis

If a task was identified as a deficiency in job performance in the needs analysis conducted in the Planning Phase of ISD, you will begin in the Analysis Phase using a process called task analysis (see Figure 4). Task analysis is the process of breaking down tasks into subtasks (performance steps), conditions, and standards .

Figure 4 Determine Type of Analysis



Objectives

The objectives of this chapter are contained in five sections.

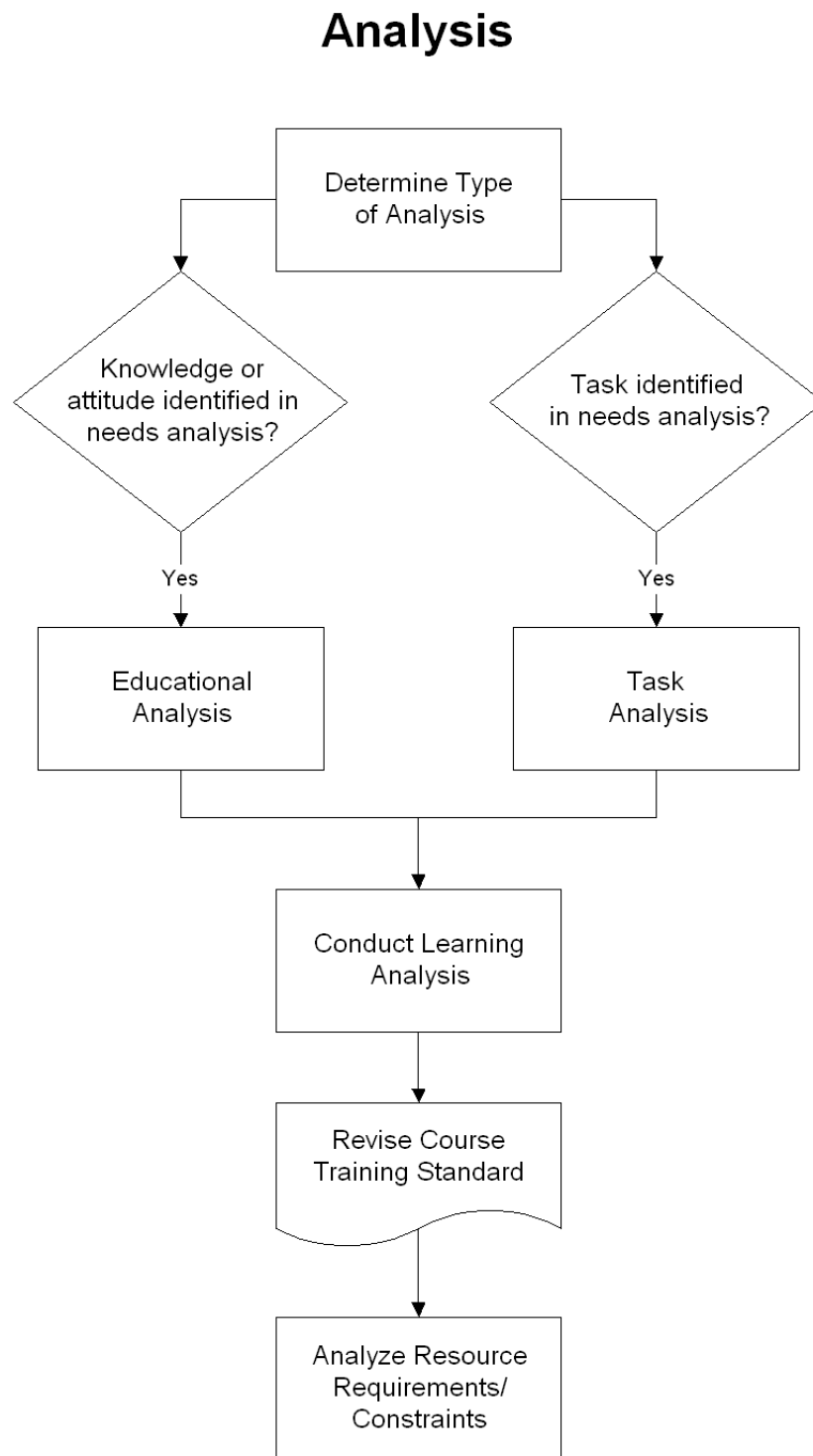
Section	Title	Page
A	Conduct Educational Analysis	46
B	Conduct Task Analysis	48
C	Conduct Learning Analysis	57
D	Revise Course Training Standard	63
E	Analyze Resource Requirements/Constraint s	65

**Analysis process
flowchart**

The Analysis Phase of ISD is depicted in the following flowchart (Figure 5) as a quick reminder of the activities involved in the analysis process.

**Analysis process
flowchart
(Continued)**

Figure 5 Analysis Process Flowchart



Section A

Conduct Educational Analysis

Introduction

BMT curriculum developers are responsible for analyzing the common skills, knowledge, and attitudes that all airmen must possess to function as an enlisted member of the Air Force. These were identified in the needs analysis conducted in the Planning stage. BMT instills the basic core values, discipline, and attitudes inherent in all members of the Air Force. These goals are supported by tasks performed on the job as well as knowledge and attitudes that must be acquired as part of the job. The knowledge and attitudes are the focus of educational analysis. Educational analysis is the process of reviewing educational requirements and developing educational goals.

When is educational analysis done?

During a BMT Review or as a result of an Out of Cycle requirement, educational goals may have been articulated in your tasking such as a goal of reducing accidents or a goal of increasing awareness of alcohol abuse. In the process of needs analysis, you may have further broken down those goals into definable knowledge and attitudes so that a determination could be made as to whether training was required. If that was done, the bulk of your work is done and you may continue with learning analysis (see Section C).

If a needs analysis was not conducted, it will be necessary to start with educational analysis to break down educational requirements into goals defined by knowledge and attitudes.

How to conduct an educational analysis

The process of conducting an educational analysis involves a number of steps. The actual number may depend on the type and scope of the analysis being conducted. Normally you should do the following:

Review tasking. Review the tasking from the BMT Review or Out of Cycle requirement to determine the scope of the training need and the subject matter. Tasking may also be in the form of an identified requirement as a result of course evaluation.

Collect data. Data may be collected using several methods such as:

- Review of doctrine, publications, or other materials provided by personnel responsible for tasking .
- Interviews with experts.
- Review of other organization's or other services' documentation on same or similar subjects .
- System comparisons (new system to existing similar system) .
- Observations.

Identify knowledge and attitudes. Analyze the data to identify the goals of the training to include the broad knowledge and attitudes that must be acquired to support the goal.

Document results. The results of your analysis should be a listing of :

- Knowledge
- Attitudes

Section B

Conduct Task Analysis

Introduction

If tasks are identified as part of the needs analysis, they must be further analyzed to determine performance requirements such as the conditions under which they are performed and the performance standard that must be achieved. If you are revising curriculum, the effort may not require another task analysis.

What is task analysis ?

Task analysis is the process of breaking a task down and identifying :

Subtasks (also called performance steps) of a task and the sequence of those steps.

Conditions or limits under which the task will be performed such as what tools, equipment, materials or information will be needed to perform the task.

Standard of performance that must be achieved.

Why is task analysis necessary ?

Breaking tasks down by subtasks (performance steps), conditions, and standards provides a focus for training. It further enables a better understanding of the task that will assist curriculum developers when developing the learning objectives and curriculum supportive of a task .

Writing a task statement

In needs analysis, you extracted the tasks performed by all airmen from the identified training need. In task analysis, you will further analyze and break down those tasks. To do this, you must ensure you have correctly written task statements. A task describes what the job holder must do on the job. An important distinction to make is that a task should not describe what the job holder does during training.

General Guidance
<p>1. Begin with a present-tense action verb followed by an object indicating the action to be performed:</p> <p>Example: Clean squadron.</p> <p>Write separate, specific statements for each task. Avoid combining vague items of skill, knowledge, or responsibility such as :</p> <p>Has responsibility for cleaning squadron.</p> <p>2. Relate the task to the job, not the instructional environment.</p> <p>Example: Manage a budget.</p> <p>Not</p> <p>Attend lecture on financial management.</p>

Specific Guidance	Example
Select a verb that describes the behavior performed on the job.	<p>Perform, Execute, Apply, Construct, Employ, Report, Field-strip, Maintain, etc.</p> <p>Not</p> <p>vague verbs such as Understand, Know, Check, Assist, Clarify, Be familiar with</p>

**Writing a task statement
(Continued)**

Specific Guidance	Example
Do <u>not</u> select a verb that describes performance in the training environment .	Not Practice, demonstrate
Use only one verb.	Maintain M-16 rifle. Not Assemble and maintain M-16 rifle.
When possible, avoid multiple objects; this may indicate the need for more than one task.	Perform basic field protection. Not Perform basic field protection and field security .
Provide clarity. Use wording that is easily understood; be precise so it means the same thing to each individual .	Perform basic first aid. Not Perform self-aid/buddy care first aid procedures, etc.
Be brief, concise, and straight to the point.	Maintain personal hygiene. Not Accomplish necessary steps involved in the process of maintaining personal hygiene.

Components of a task

A task is comprised of two or more components:

Subtask (performance step) - not all tasks will contain subtasks
Condition
Standard

What is a subtask?	Subtasks, or performance steps, specify the actions required to accomplish a task. They are groupings of work activities that, when combined, make up a task. They may also be defined as a series of actions leading to a terminal outcome. Subtasks may follow a logical progression that should be performed sequentially, or they may be independent of one another. Not all tasks will warrant subtasks.
<hr/>	
Reasons for identifying subtasks	<p>There are several reasons for identifying subtasks. Breaking a task into subtasks:</p> <ul style="list-style-type: none">Provides curriculum developers with a better understanding of the task and what is required to perform the task.Ensures trainees are provided with the detailed knowledge and skills required to perform the larger task.Helps curriculum developers sequence the training.Helps curriculum developers analyze complex tasks.
<hr/>	
Writing a subtask	Examine each task statement. See if it contains more than one group of activities that must be performed sequentially or independently. List all subtasks supportive of a task. Review the complete list of subtasks for each task. Make sure that no subtask overlaps, and that together they account for all performance required in the task.

**Example of
subtasks**

The following is an example of subtasks that make up a task.

Example of Subtasks
Task: Perform individual drill movements. Subtasks: Assume position of attention. Assume parade rest. Present arms. Perform right face. Perform left face. Perform about face.

**What is a
condition?**

Conditions set forth the real-world or wartime circumstances in which the task is to be performed. Conditions describe the equipment and resources needed to perform the task on the job, and the assistance, location, safety considerations, etc., that relate to performance of the task.

**Examples of
conditions**

Examples of Conditions
Given a first aid kit... Given an M-16 rifle.... Without the aid of references... In a field environment... Under the cover of darkness...

What is a standard?

Standards provide the proficiency level expected when the task is performed. The standard can cite a technical manual or doctrinal reference (e.g., in accordance with AFI 36-2238), or the standard can be defined in terms of completeness, time, and accuracy.

Examples of standards

Examples of Standards
Without error in accordance with AFI 36-2903....
Within 10 minutes...
By achieving 50% hits on the target...

Data collection

As a curriculum developer, your first step in task analysis will be to collect the necessary data for analysis. As you begin to collect the data, you will find there are many sources.

Data sources

Some of the data sources are:

- AF regulations and manuals
- Training documentation
- SME input
- Technical orders
- Standard Operating Procedures
- Major Command (MAJCOM) input
- Manufacturer's manuals
- Other organizations such as Legal, Military Equal Opportunity (MEO), Public Health, Readiness, Medical, etc.

Data collection techniques

When collecting data, consider the following techniques:

- Review data sources and documents.
- Analyze other existing curriculum pertaining to the subject matter.
- Observe actual job performance (if possible).
- Interview SMEs.

Questions to ask

When collecting data, ask appropriate questions to collect different types of information .

To Identify . . .	Ask the Question . . .
Subtasks (Performance steps)	What does the trainee do first? Next?
Conditions:	
Tools or materials	What is used to perform the task (weapon, equipment, computer) ?
Cues	How does the trainee know when to do what?
Work environment	Under what condition is the task performed?
Standard of performance	What is the standard of acceptable performance ? How do you know when the task is performed satisfactorily? Is the standard based on completeness ? Is the standard based on accuracy ? Is the standard based on time?

Validate task information

Now that you have analyzed the data and determined the tasks required of all airmen and the subtasks involved in each task, your next step is to verify the information. For each ISD effort, the data collected and the results of the data analysis need to be verified. You can verify your data through:

Interviews with SMEs.

Review of technical documentation related to subject matter.

Observation of task performance.

Document task analysis results

You may use a variety of formats to document task analysis results. A simple way is to use a Task Analysis Worksheet like the one shown on the next page. Regardless of the format that you choose, you should document the information you need to develop the objectives in the next phase of the ISD process (see [Chapter 5](#), Section A).

**Task analysis
worksheet**

An example of a completed task analysis worksheet follows. You may modify this worksheet, as needed, to help you collect sufficient data.

Job Aid - Task Analysis Worksheet	
Task: Perform individual drill movements.	
Condition	
Equipment (equipment and tools required to perform task)	None
Safety (safety considerations when performing task)	Potholes, loose bootstrings, weather conditions
Cue (what prompts performance)	On command
Location (where the task is performed)	Recruit Housing and Training (RHT) Overhang
Standard	
Standard of Performance (time, rate, percent, etc.)	Without error
References (documentation used in task performance such as regulations.)	AFMAN 36-2203, Drill and Ceremonies 737 TRGI 36-3, Volume I, Basic Military Training
Subtasks (Performance steps)	Assume position of attention. Assume parade rest. Present arms. Perform right face. Perform left face. Perform about face.

Section C

Conduct Learning Analysis

Introduction

Now that the tasks to be trained have been determined, you need to conduct a learning analysis. As discussed in educational analysis, not all ISD instruction is based on tasks and task analysis. In Air Force educational courses, the translation of educational goals into measurable behaviors does not always involve traditional task analysis and, instead, sample behaviors are derived from analysis of the type and level of learning required and the knowledge content of the subject area. This is done through learning analysis. A learning analysis is conducted on the tasks as well as knowledge and attitudes identified for training. Conducting a learning analysis will aid you immeasurably when designing training. Results of the learning analysis enable you to design training based on desired learning outcomes.

What is learning analysis?

Learning analysis is the process of analyzing the real-world tasks performed on the job and translating them into behaviors performed in the training environment. Learning analysis involves establishing learning outcomes in terms of types of learning involved and level of learning desired.

Learning analysis steps

Tasks. Learning analysis allows you to determine the best way to structure training to ensure that it is effective and cost-efficient. When you conduct a learning analysis, you should:

- Identify the skills and knowledge needed to support task performance.
- Combine skills and knowledge into meaningful groupings.
- Identify the types of learning involved and determine level of learning.

Knowledge and attitudes. The learning analysis should differ depending on whether the training is performance-oriented (supported by tasks) or knowledge-oriented (supported by knowledge and attitudes). In the latter case, rather than listing the skills and knowledge needed to support task performance, the curriculum developer looks directly at categorizing type and level of learning needed to satisfy the instructional goal.

**Step 1 - Identify
skills and
knowledge**

For every task or subtask of a task, generate a list of knowledge and skills supportive of it.

For example, a task is 'Perform basic first aid'. Two related subtasks are 'Treat a hemorrhage' and 'Treat a wound'. The knowledge and skills associated with the subtasks include the following :

Knowledge	Skills
<u>Treat a hemorrhage:</u> Knowledge of triage Knowledge of triage categories Knowledge of first aid materials Knowledge of casualty assessment procedures Knowledge of types of hemorrhages Knowledge of procedures for treating hemorrhages	<u>Treat a hemorrhage:</u> Ability to group victims according to injury Ability to assess casualty Ability to treat internal hemorrhage Ability to treat external hemorrhage
<u>Treat a wound:</u> Knowledge of triage Knowledge of triage categories Knowledge of first aid materials Knowledge of casualty assessment procedures Knowledge of types of wounds Knowledge of procedures for treating wounds	<u>Treat a wound:</u> Ability to group victims according to injury Ability to assess casualty Ability to treat head wound Ability to treat neck wound Ability to treat sucking chest wound

For any knowledge or attitudes not supported by a task, you may break them down further by identifying additional knowledge required. For example, 'Knowledge of first aid materials', may generate a list of supporting knowledge including:

Knowledge of abdominal dressing
Knowledge of field dressing
Knowledge of cravat
Knowledge of improvised materials
Knowledge of occlusive dressing

Step 2 - Combine skills and knowledge

Next, combine knowledge and skills which are duplicates, very similar, or common to more than one task or subtask. Eliminating duplicates ensures the same knowledge or skill is not taught more than once during a training program. These groupings of knowledge and skills become the root behaviors of learning objectives (see [Chapter 5](#), Section A). The common groupings of the knowledge and skills for 'Treat a hemorrhage' and 'Treat a wound' are:

Common Groupings of Knowledge and Skills
Knowledge of triage Knowledge of triage categories Ability to group victims according to injury Knowledge of first aid materials Knowledge of casualty assessment procedures Ability to assess casualty Knowledge of types of hemorrhages Knowledge of procedures for treating hemorrhages Ability to treat internal hemorrhage Ability to treat external hemorrhage Knowledge of types of wounds Knowledge of procedures for treating wounds Ability to treat head wound Ability to treat neck wound Ability to treat sucking chest wound (Note that the redundant knowledge and skills for triage, first aid, and casualty assessment were only listed once; duplicates were deleted.)

Step 3 – Identify types/level of learning

Categorize knowledge and skills according to types of learning and level of learning, or level of proficiency desired. Types of learning include:

Verbal information
Intellectual skills
Motor skills
Attitudes

Verbal information

Verbal information is required to develop the skills and attitudes for effective accomplishment of a step or task. The learning of knowledge is imparted through verbal information. Verbal information involves storing and recalling information and refers to the learning and recall of names, labels, facts, nomenclature, etc. The learning outcome of imparting verbal information is the acquisition of knowledge .

Learning Outcome	Behavior
Knowledge	Able to recall, label, name, and define.

Skills

A skill is the ability to perform a job-related activity that contributes to the effective accomplishment of a step or job. There are two types of skills:

Intellectual skills
Motor skills

**Step 3 – Identify
types/level of
learning
(Continued)**

**Intellectual
skills**

Intellectual skills are the foundation for all higher learning. Intellectual skills involve identifying, classifying, categorizing, using rules, solving problems, thinking, reasoning, analyzing, discriminating, evaluating, and judging. To learn a higher-order skill, the trainee must first acquire knowledge provided by verbal information. The learning outcomes of acquiring intellectual skills are shown below:

Learning Outcome	Behavior
Comprehension	Able to identify relationship of basic facts to principles.
Analysis	Able to analyze facts and principles and draw conclusions.
Evaluation	Able to evaluate conditions and make decisions.

Motor skills

Motor skills are learned behaviors that involve the smooth coordinated use of muscles. Motor skills involve the performance of some activity that is directly observable. The learning outcomes of acquiring motor skills are shown below:

Learning Outcome	Behavior
Performance under supervision	Able to perform simple parts of task. Must be told or shown how to do most of task.
Performance under partial supervision	Able to perform most parts of task. Needs help on hardest parts.
Performance without supervision, but requires feedback	Able to perform all parts of task. Needs feedback and spot check of completed work.
Performance without supervision	Able to perform task quickly and accurately. Can show or tell others how to perform task.

**Step 3 – Identify
types/level of
learning
(Continued)**

Attitudes

The acquisition of particular attitudes may require prior learning of intellectual skills or verbal information. For example, if a positive attitude toward safety is to be acquired, the trainee should have (1) a variety of verbal information about the advantages of following safety procedures or the consequences of not following them, and (2) intellectual skills (concepts and procedures) associated with safety .

Examples

Some examples of knowledge and skills categorized by learning type follow.

Verbal information	Knowledge of triage Knowledge of triage categories Knowledge of first aid materials Knowledge of types of hemorrhages Knowledge of procedures for treating hemorrhages Knowledge of types of wounds Knowledge of procedures for treating wounds Knowledge of casualty assessment procedures
Intellectual skill	Ability to group victims according to injury Ability to assess casualty
Motor skill	Ability to treat internal hemorrhage Ability to treat external hemorrhage Ability to treat head wound Ability to treat neck wound Ability to treat sucking chest wound

Section D

Revise Course Training Standard

Developing course training standards

Once the tasks, knowledge, and attitudes to be taught in the course have been selected and documented, the training standard for the course should be developed. The course training standard (CTS) indicates the learning outcome and level of learning required for each standard. A Proficiency Code Key explains these relationships. Subject knowledge level supports knowledge objectives as well as the knowledge components of performance objectives (see [Chapter 5](#), Section A). Task performance level supports performance objectives. An example of a partial CTS follows.

Example: Course Training Standard

Proficiency Code Key			
	Scale Value	Description	Learning Outcome
Subject Knowledge Levels	A	Can identify basic facts and terms about the subject.	FACTS
	B	Can identify relationship of basic facts and state general principles about the subject.	PRINCIPLES
	C	Can analyze facts and principles and draw conclusions about the subject.	ANALYSIS
	D	Can evaluate conditions and make proper decisions about the subject.	EVALUATION
Task Performance Levels	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task.	EXTREMELY LIMITED
	2	Can perform most parts of the task. Needs help on hardest parts.	PARTIALLY PROFICIENT
	3	Can do all parts of task. Needs only spot-check of completed work.	COMPETENT
	4	Can do task quickly and accurately. Can show or tell others how to perform task.	HIGHLY PROFICIENT
Task Knowledge Levels	a	Can name some parts, tools, and simple facts about the task	NOMENCLATURE
	b	Can determine step-by-step procedures for doing the task .	PROCEDURES

- | | | |
|---|--|-------------------------|
| c | Can identify why and when the task must be done and why each step is needed. | OPERATING
PROCEDURES |
| d | Can predict, isolate, and resolve problems about the task . | COMPLETE
THEORY |

Example: Course Training Standard (Continued)

Explanations

A Subject Knowledge may be used alone to define a level of knowledge for a subject not directly related to a specific task.

- or -

A Subject Knowledge may be used in conjunction with Task Performance to define a level of knowledge directly related to performing a specific task.

Task, Knowledge, and Proficiency Level

Military Skills Development

- | | |
|---|----|
| 1. Maintain fitness and weight standards..... | 4b |
| a. Perform push-ups | 4b |
| b. Perform sit-ups | 4b |
| c. Run distance | 4b |
| 2. Perform individual drill movements | 4b |
| a. Position of attention | 4b |
| b. Parade rest | 4b |
| c. Present arms | 4b |
| d. Right face | 4b |
| e. Left face | 4b |
| f. About face | 4b |
| 3. Perform transitory drill movements | 4b |
| 4. Participate in ceremonial drill | 2b |
| 5. Perform dorm guard | 2b |

Military Skills

- | | |
|---|---|
| 1. Human Relations | b |
| 2. Air Force History and Organization | a |
| 3. Military Entitlements | b |
| 4. Financial Management | b |
| 5. Staff Referral Agencies | b |

Section E

Analyze Resource Requirements/Constraints

Introduction

Resources are critical at every step from the initial planning, through training development, to implementation and maintenance of a training program. During the Analysis Phase, you probably will not be able to determine exact resource requirements. However, you need to identify long-lead-time resource requirements such as training equipment and facilities in order to allow sufficient time to secure the needed resources or to work out alternatives in case of resource constraints.

What are resources?

Training resources are the supplies and support required to revise, design, develop, implement, and maintain a training program. Resources for a training program fall into one of several categories:

- Equipment
- Facilities
- Funds
- Personnel
- Time

Why analyze resources?

Resource analysis allows you to identify and estimate the resources required to design, develop, implement, and maintain a training program. Resource analysis identifies:

- Course development resources.
- Quantity of resources required such as number of instructors, classrooms, equipment, etc.
- When the resources are needed.
- Total cost of resources.
- Resource limits.

Who is responsible?

Managers have the overall responsibility to ensure availability of adequate resources, but curriculum developers will provide input on necessary resources to support training.

**Before analyzing
resource
requirements**

Before you begin analyzing resource requirements, keep the following things in mind .

Equipment Failure to identify training equipment requirements early may delay training implementation.
Do not order or procure equipment until course objectives have been tentatively set to make sure there is a valid requirement for the equipment.
When selecting equipment, consider:
 Suitability or appropriateness
 Usability
 Reliability
 Maintainability
 Cost

Facilities Identify facility requirements as early as possible because:
 Time required to get funds is normally long.
 Time to build new facilities or modify existing facilities can be considerable .

Funds Budgets are normally submitted and approved long before money is actually spent. Therefore, managers and curriculum developers must determine as precisely as possible what resources will be required to support the training program.

You must provide input to the budget to get funds appropriated to allow for:
 Procurement of equipment.
 Construction or modification of facilities.
 Personnel costs such as payroll.

**Before analyzing
resource
requirements
(Continued)**

Personnel Lead time for additional personnel such as curriculum developers, instructors, and maintenance support can be lengthy since it involves budget and personnel authorizations.

Time If possible, allow sufficient lead time to:
 Obtain the necessary equipment.
 Build new or modify existing facilities.
 Get personnel authorizations approved.
 Gain and train instructors.
 Secure the required funding.

**Analyzing resource
requirements**

Finding answers to the questions below will help you analyze the resource requirements for the training program.

Resource	Sample Questions
Equipment	<p>What types of equipment will be required (training support such as equipment; classroom support such as projectors, computers)?</p> <p>What is the lead time for equipment?</p> <p>Where and how will the equipment be obtained?</p> <p>How will the equipment be used in the course?</p> <p>What quantities will be required?</p> <p>What is the life cycle of the equipment?</p> <p>In case of an equipment constraint, can alternative equipment be used? If so, what equipment?</p> <p>Who will maintain the equipment?</p>

**Analyzing resource requirements
(Continued)**

Resource	Sample Questions
Facilities	<p>What types of facilities will be required (classrooms, field setting)?</p> <p>Will it be necessary to have secure classrooms?</p> <p>How much space will be required?</p> <p>Are facilities available on the base?</p> <p>Will facilities require modifications?</p> <p>Who will maintain facilities?</p> <p>Does the facility meet environmental requirements, if applicable?</p>
Funds	<p>What are the initial costs of equipment, facilities and personnel?</p> <p>What are the recurring costs associated with implementing the training program ?</p>
Personnel	<p>How many curriculum developers will be required to meet the training delivery date?</p> <p>Will qualified instructors be needed? If so, how many?</p> <p>Will maintenance support be required? If so, will additional maintenance personnel be required?</p> <p>What are the trainee allocation requirements?</p> <p>Will the training program require additional overhead personnel?</p>
Time	<p>What is the training delivery date?</p> <p>How much time will be required to develop the training?</p> <p>Are there any equipment lead-time requirements? If so, how much?</p> <p>If new or modified facilities are required, how long will it take?</p> <p>What is the estimated course length?</p>

**What about
resource
constraints?**

Air Force resources are normally in short supply and, therefore, you may not be able to obtain what you need to support your training program. When faced with a resource constraint, consider the actions/alternatives listed below.

Constraint	Action/Alternative
Equipment	Borrow equipment belonging to other training organizations or MAJCOMs . Secure equipment from bases no longer in need of it. Share equipment with other training organizations or MAJCOMs. Increase group size on the equipment. Operate multiple shifts.
Facilities	Use temporary facilities. Use other training organizations' or MAJCOM facilities . Operate on multiple shifts.
Funds	Reduce the resource requirements. Seek alternative funding sources.
Personnel	Share curriculum developers or instructors from other training organizations or MAJCOMs. Borrow additional personnel such as instructors from other training organizations or MAJCOMs.
Time	Select alternative methods or media.

**Updating resource
requirements**

As you progress through the phases of ISD, you will continually update your resource requirements as you gather additional data and as resources become available or unavailable.

Chapter 5

DESIGN

Overview

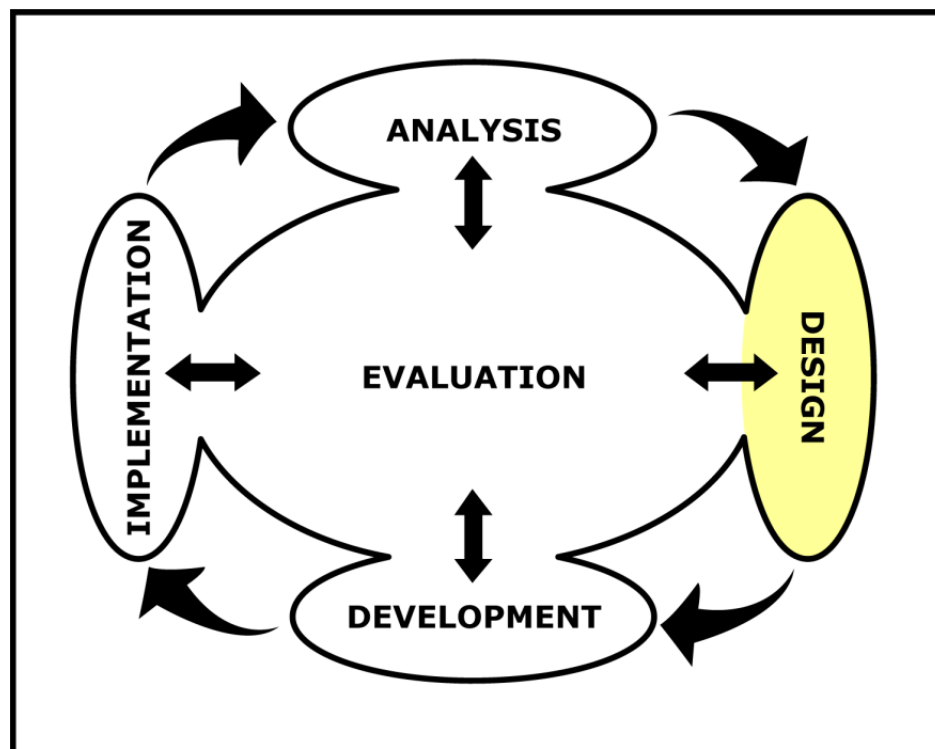
Introduction

During the Design Phase, you will build the framework from which training is developed including the development of learning objectives and tests and the selection of media. What you do here plays a key role in determining the effectiveness and cost-efficiency of the training you will develop in the next phase of the ISD process.

Where are you in the process?

An ISD model with the Design Phase highlighted is presented in Figure 6 to help you visualize where you are in the ISD process.

Figure 6 Design Phase



Objectives

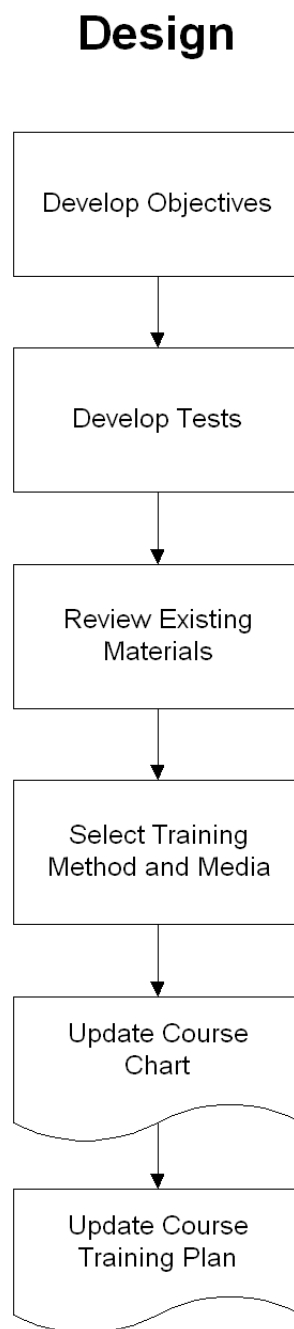
The objectives of this chapter are contained in six sections.

Section	Title	Page
A	Develop Objectives	73
B	Develop Tests	87
C	Review Existing Materials	105
D	Select Training Method and Media	107
E	Update Course Chart	123
F	Update Course Training Plan	128

**Design process
flowchart**

The Design Phase of ISD is depicted in the flowchart (Figure 7) below as a quick reminder of the activities involved in the design process.

Figure 7 Design Process Flowchart



Section A

Develop Objectives

Introduction

In the Analysis Phase, you developed tasks that defined job behavior. You further identified knowledge and attitudes not directly associated with tasks performed on the job. In the Design Phase, you will translate the tasks and knowledge into behaviors performed in the training setting.

Learning objectives

Learning objectives are real-world task behaviors and knowledge modified to fit the training environment, that describe precisely what the trainee is expected to do, under specified conditions, and to a specified standard. Objectives are stated in terms of what trainees must be able to do at the end of training.

Purpose

Objectives serve several purposes. Some examples follow.

For Curriculum Developers	For Trainees
<p>Serve as the building blocks for training.</p> <p>Provide a basis for test development .</p> <p>Allow for selection of the most appropriate training strategies.</p>	<p>Direct attention to the important content .</p> <p>Communicate standard of performance expected following training.</p> <p>Serve as a self-check for progress.</p>

Where to read about it

This section covers three topics.

Topic	Page
Components of Objectives	74
Guidelines for Developing Objectives	79
Grouping and Sequencing Objectives	84

Components of Objectives

Introduction

A learning objective is made up of three components: A behavior, conditions, and a standard. Before starting to develop objectives, you should become thoroughly familiar with each component.

Behavior

A behavior is the activity the trainee is expected to demonstrate following training. A behavior must be written in measurable, observable terms so trainee performance can be objectively evaluated. A behavior must be clearly stated so that everyone – trainees, instructors, and developers – knows exactly what the trainee is expected to do in the training environment.

Performance vs knowledge behavior s

Trained behaviors may be performance-based or knowledge-based. A performance objective is the term used to describe a performance-based behavior; a knowledge objective is the term used to describe a knowledge-based behavior. When writing a behavior, you must consider whether the behavior will support knowledge or performance. What will the trainee be required to do at the end of training?

If the trainee will be required to perform a task or some action, the learning outcome is a performance behavior.

If the trainee will be required to answer a written test question, the learning outcome is a knowledge behavior.

Verb selection

Select a verb that supports the action required of the trainee. Use action verbs to reduce ambiguity. Action verbs are observable and measurable while ambiguous verbs are not. The following table provides some examples.

**Verb selection
(Continued)**

Action Verbs	Ambiguous Verbs
Performance Objective	Understand Know Learn Experience
Perform Apply Execute Fire	
Knowledge Objective	
Identify List	

Available resources Resources available in the training environment may also affect whether you are able to develop a performance or knowledge objective.

If you:	Type of objective	Example
Have resources to train skill in practical setting .	Performance	Treat wound.
Do not have resources to train skill in practical setting and will only be able to provide lecture orientation .	Knowledge	Identify the procedures for treating a wound.

Examples of behaviors

The following are some examples of behaviors.

Examples of Behavior Statements
Identify antiterrorism measures.
List the three Air Force core values.
Apply basic field protection.
Perform basic first aid.
Perform a right face.
Set up a first issue wall locker.

Conditions

A condition identifies the situation under which a trainee is expected to demonstrate a behavior. A properly prepared objective clearly states the limits or conditions of trainee performance.

Any information or resource (e.g., technical orders, tools, equipment, notes) that is provided to the trainee to perform the behavior is considered an aiding condition .

Any information or resource that is not made available to the trainee is considered a limiting condition.

The environment (e.g., weather, location, time of day, facilities) in which the trainee must perform the behavior is considered an environmental condition.

Examples of condition s

Condition statements are derived from task analysis data. The following are some examples of conditions .

Examples of Condition Statements	
Type	Condition
Aiding	Given bandages, field dressing, and a first aid kit... Given an M-16 rifle, cartridge belt, magazines, magazine pouches, and 5 rounds of 5.56mm ammunition . . . Given AFMAN 10-100... Given LAFB Form 341... Given a mattress cover, two blankets, and two sheets...
Limiting	Without the aid of references. . .
Environmental	In a field setting... In a dormitory...

Mimicking job behavior

Whenever possible, the condition should be the same as the actual conditions under which the job is performed. In this way, training will directly support job performance. There are two instances in which conditions may not replicate job conditions:

The task must be simulated in the training environment because performance could be hazardous or impossible to reproduce in a training setting.

The task can only be partially trained in the training environment due to lack of resources (e.g., equipment, facilities, training time). In these cases, an orientation may be provided on the subject matter, rather than a detailed lesson with practical application.

Some examples follow.

**Mimicking job
behavior
(Continued)**

	Job Condition	Learning Condition
Learning condition mimics job condition	Given an M-16 rifle, cartridge belt, and magazine pouches...	Given an M-16 rifle, cartridge belt, and magazine pouches...
Learning condition with simulated or degraded conditions	Given an M-16 rifle...	Given an inert M-16 rifle...

Standard

A standard defines the criteria for acceptable performance by the trainee. It is stated in terms such as completeness, accuracy, time constraints, and performance rates. It identifies the proficiency trainees must achieve when they perform the behavior under the specified conditions. Without a standard, it is impossible to determine when the trainees have achieved the objective .

Types of standards

Standards can be classified in one of the following types.

Type of Standard	Examples
Standard operating procedure	. . . in accordance with AFMAN 10-100, Airman's Manual.
Accuracy - no error	. . . without violating firearms safety rules. . . . without error.
Minimum acceptable level of performance	. . . without exceeding maximum allowable demerits .
Time requirement	. . . within 15 minutes.

Guidelines for Developing Objectives

Introduction

You will develop objectives from the data you collected through the learning analysis in the Analysis Phase. Using learning analysis information, what you have learned about objectives to this point, and a few guidelines, you will be able to develop effective objectives.

Example objective

An example objective follows.

Component	Description	Example
Behavior	Action to be taken	Perform basic first aid
Condition	Job aids, tools, materials, technical orders, special instructions, etc.	Given a casualty in a field setting
Standard	Time constraints, completeness, accuracy, rate, etc.	IAW AFI 36-2238, FM 21-11, and AFMAN 10-100

Types of objectives

Most tasks are made up of steps and procedures (subtasks). Trainees need to learn each of these subtasks before they can perform a particular task. To facilitate learning, you need to specify objectives for those subtasks, in addition to the task itself. This hierarchy of objectives will allow the most effective and efficient learning sequence to be developed. There are two types of objectives :

**Types of objectives
(Continued)**

Category	Description
Terminal	An objective that trainees will be expected to accomplish when they have completed the instruction. It may be supported by several enabling objectives.
Enabling	An objective that trainees must attain in order to accomplish a terminal objective. Enabling objectives provide the level of detail necessary to describe the knowledge and skills that must be learned to demonstrate satisfactory performance of the terminal objective.

**Guidelines for
developing
objectives**

Several guidelines for developing objectives are provided below.

Type	Guidelines
General	Use learning analysis data gathered during the Analysis Phase . Document each objective on a worksheet.
Behavior	Select a behavior that matches the job behavior as closely as possible. State the behavior in terms that everyone understands . Use an action verb to describe the desired behavior. Use behaviors that are: Observable Measurable Reliable Verifiable
Condition	Select conditions that match job conditions as closely as possible. Ensure conditions are realistic.

**Guidelines for
developing
objectives
(Continued)**

Type	Guidelines
Standard	<p>Select a standard that matches job performance requirements as closely as possible.</p> <p>Use a standard that is clear and understood by everyone.</p> <p>Use a standard that accurately measures trainee achievement of the objective.</p> <p>Ensure the standard is:</p> <p>Complete Accurate Achievable</p>

**Step 1: Develop a
terminal objective**

Start with the task behavior identified in the Analysis Phase. Develop a terminal objective that translates the task from the real-world environment to the training environment. Revise conditions and standards as necessary to reflect the learning environment.

**Step 2: Develop
enabling objectives**

For every grouping of knowledge and skills identified in the learning analysis, develop an enabling objective reflecting the conditions and standards required in the learning environment.

An example follows.

**Step 2: Develop
enabling objectives
(Continued)**

Knowledge and Skills	Learning Objectives
Knowledge of triage Knowledge of triage categories Ability to group victims according to injury	Given casualties in a field setting, without the aid of references, triage casualties IAW AFI 36-2238 .
Knowledge of types of hemorrhages Knowledge of procedures for treating hemorrhages Ability to treat internal hemorrhage Ability to treat external hemorrhage	Given a casualty with a hemorrhage, without the aid of references, treat the hemorrhage IAW AFI 36-2238 and FM 21-11.

Whenever possible, develop performance objectives over knowledge objectives. This ensures training more closely replicates job performance. If, however, training resources do not allow performance, it will be necessary to develop a knowledge objective.

Some groupings will only reflect verbal information and, as such, will translate to a knowledge objective such as 'Identify first aid materials'.

Develop all enabling objectives supporting a terminal objective before moving on to the next terminal objective.

**Example of
objective hierarchy**Terminal Objective:

Without the aid of references, perform individual drill movements in accordance with (IAW) AFMAN 36-2203, Drill and Ceremonies.

Enabling Objectives:

Without the aid of references, stand at the position of attention IAW AFMAN 36-2203, Drill and Ceremonies.

Without the aid of references, stand at parade rest IAW AFMAN 36-2203, Drill and Ceremonies.

Without the aid of references, present arms IAW AFMAN 36-2203, Drill and Ceremonies.

Without the aid of references, perform a right face IAW AFMAN 36-2203, Drill and Ceremonies.

Without the aid of references, perform a left face IAW AFMAN 36-2203, Drill and Ceremonies.

Without the aid of references, perform an about face IAW AFMAN 36-2203, Drill and Ceremonies.

Grouping and Sequencing Objectives

Introduction

The effectiveness and cost-efficiency of a course will depend in part on how well you cluster and sequence objectives.

Grouping objectives

The purpose of grouping objectives is to develop logical and meaningful portions of training such as topics, units, or lessons.

Group terminal objectives that deal with the same subject together. For example, all objectives dealing with dorm guard or dorm maintenance may be grouped together.

Group terminal objectives with the same conditions (e.g., in a field environment, using an M-16 rifle) together. Grouping by condition maximizes instructional time because time is not lost due to traveling from one location to another. Time is also not lost obtaining the same equipment at different times throughout training.

Sequencing of objectives

The goal of good instructional design is to establish a sequence of instruction within a course that promotes effective learning. The sequence of lessons within a course should be based on the relationship among the objectives. The most obvious sequence follows the order from simple to complex. Place easily learned objectives early in the training sequence; place complex and cumulative skills late in the sequence. The following table summarizes the major considerations regarding sequential arrangement of objectives .

Relationship Among Objectives	Description
Dependent	<p>In a dependent relationship, skills and knowledge in one objective are related to those in another such that mastery of one objective requires prior mastery of another. Sequence objectives so supporting knowledge and skills are acquired before dependent subject matter is introduced. For example, serving as dorm guard is dependent upon reporting procedures. A trainee must learn reporting procedures before he can function as a dorm guard. Provide any common or "core" training early in the training sequence that is supportive of multiple objectives.</p> <p>A dependent relationship can also relate to learning outcome. For example, the learning of verbal information is generally prerequisite to the learning of intellectual skills and motor skills. Objectives should be sequenced so that verbal information supportive of intellectual skills and motor skills is taught before these skills.</p>
Sequential	<p>In a sequential relationship, objectives have a relationship among them that correlates to the order in which they occur on the job. For example, preventive maintenance of an M-16 rifle must be performed in sequence of disassembly, cleaning, inspection, lubrication, and reassembly. Supportive learning objectives should be sequenced in this fashion.</p>
Independent	<p>Objectives that are independent of one another may be sequenced in any order. For example, a terminal objective of "Identify basic facts about Air Force rank recognition" may be supported by the enabling objectives of "Identify enlisted rank insignias" and "Identify officer rank insignias." These enabling objectives are independent of one another and may be sequenced in any order.</p>

Reasons for sequencing

Properly sequenced training provides:

Trainee motivation – Trainees learn best when they are motivated to do so. In most cases, motivation depends on a proper sense of direction. Properly sequenced training will provide this direction and will give trainees a "mental roadmap" of where they are going and how they are going to get there.

Meaningful relationship – A proper sequence can provide trainees with a pattern of relationships so that each training activity will have a purpose. If the training is meaningful to the trainees, they will learn more easily and quickly.

Consistency in content – Proper sequencing helps to avoid inconsistencies in the training content. Carefully sequenced training will eliminate gaps and duplication in the training. Consistency of content ensures that skill progression is orderly and that prerequisite knowledge and skill have been acquired prior to the introduction of more complex information .

Normally, training activities should be sequenced to proceed from simple to complex. Trainees are taught the easier tasks first, then progress to the more complex tasks.

Section B

Develop Tests

Introduction	<p>As part of designing instruction, tests must be developed. Testing is critical to maintaining or improving the effectiveness of instruction by determining if learning objectives have been met. A test is used to evaluate training by measuring proficiency against established standards. Test items are written after objectives have been written to ensure test items are closely related to objectives.</p>
Criterion-referenced testing	<p>Air Force tests are based on the concept of criterion-referenced testing. Criterion-referenced tests measure knowledge objectives, knowledge components of performance objectives, and performance objectives in sufficient quantity to provide an acceptable degree of confidence that the trainees have attained the required knowledge and skills. To ensure tests adequately measure objectives, the performance required in the test should match the performance required in the objective.</p>
Assessment method	<p>Most Air Force tests can be classified into two main groups: performance tests and written tests.</p>
Performance test	<p>A performance test is one in which the trainee actually performs the skill required of the objective. The most content-valid test of any kind of learning is a performance test because the trainee actually performs what is required on the job. Within BMT, performance tests are conducted for reporting procedures, individual drill, physical conditioning, and dormitory performance.</p> <p>A performance test often duplicates job behaviors by using the same resources, equipment, setting, or circumstance that the trainee will encounter on the job.</p> <p>If a performance test cannot duplicate the job, it should simulate job conditions as closely as possible to provide a realistic setting in which to evaluate the skills required for job performance.</p>

**Performance test
(Continued)**

A performance test is used to evaluate a performance objective. A performance test measures both motor skills and intellectual skills.

Motor skills	Motor skills are most commonly tested via performance test. If the objective is to perform entry and exit procedures, then the trainee will actually be tested on his ability to perform these procedures correctly.
Intellectual skills	Intellectual skills may also be tested via performance test. If the objective is to process information in order to make a decision, then a test where the trainee has to read a scenario or a problem and state or record a decision is also considered a performance test. This is only true if the action, such as processing information to make a decision, is the same action as that performed on the job.

Written test

A written test is one in which a trainee's knowledge of a subject is evaluated. The BMT Academic Test is given to trainees in the fourth week of training prior to departure to Warrior Week. A written test is used to evaluate a knowledge objective. A written test measures verbal information and intellectual skills. There are several cases when you should choose to design written tests.

**Written test
(Continued)**

Reason for Designing Written Test	Description
Knowledge objective	If you have a knowledge objective, you must test it through a written test.
Time, cost, safety, and resource constraints do not permit performance-based testing.	If the actual behavior cannot be tested in a performance test (because it is too costly, dangerous or impractical), the next best option is to test the knowledge that enables performance of the skill. For example, asking a trainee a question requiring him to identify the steps for responding to an ambush enables his knowledge of the procedures to be tested.
You wish to test a trainee's knowledge of a job task in addition to testing his application of the skills in a performance test .	There are times when you will not have enabling objectives supportive of a terminal objective. However, you may still design written test items to test the knowledge components supportive of the performance objective. Tests that do not test the actual behavior, but test component or related behaviors, are valid to the extent that they predict trainee performance on the actual task .

Comparison of written and performance tests

Different types of test items have advantages and disadvantages with regard to good test construction. These advantages and disadvantages have to be considered in terms of validity and reliability of the test .

Written Test Item	Performance Test Item
Requires trainees to demonstrate knowledge by responding to various types of written questions.	Requires trainees to accomplish a job-like task under controlled conditions .
Emphasizes verbal aspects.	Emphasizes nonverbal aspects or motor skills.
May require trainees to find, read, and use technical materials .	May require trainees to find, read, and use certain technical material (job aids, for example).
Items are knowledge the trainee should learn to perform or make decisions on the job.	Items are skills that trainees should perform, or the decisions they may make on the job.
Items are independent and may be presented in any order.	Items are often dependent on the sequence in which they are presented.
Errors on one item should not affect performance on another item.	Errors early in the sequence may affect final outcome of the task.

Guidelines for designing tests

There are specific guidelines for designing written tests and performance tests.

Topic	Page
Guidelines for Designing Written Tests	91
Guidelines for Designing Performance Tests	99

Guidelines for Designing Written Tests

Types of written test questions

The most common types of written test questions are multiple-choice, true/false, matching, labeling, fill-in-the-blank, and essay.

These types of test items may be used to evaluate trainee knowledge following training. They may also be used to provide Progress Checks at different points throughout training or to intersperse self-checks throughout Trainee Workbooks or other trainee materials.

Multiple-choice

Multiple-choice test items are probably the most common type of item used in written tests. They test recall, problem-solving skills, application of facts and principles, and understanding. A multiple choice item consists of:

- A stem (a question or uncompleted statement)
- A correct response
- Distracters (incorrect responses)

Example

Directions: Carefully read the questions or statements below and circle the correct response. There is only one correct response.

1. Prejudice can be defined as:
 - a. evaluations based on merit.
 - b. credit given for capabilities.
 - c. rewards based on performance.
 - d. prejudgment without knowledge.
-

**Multiple-choice
(Continued)****Development Guidelines**

All responses should follow grammatically from the stem.
All responses should be of approximately the same length.
All responses should have a similar grammatical structure.
All responses should use similar terminology.
Provide as many responses as necessary but normally four.
Position the correct response randomly throughout the test.
Limit the use of responses such as "none of the above" or "all of the above."
Ensure there is only one correct answer.
Ensure distracters are plausible, but incorrect.

True/False

A true/false test should be used sparingly since the chance of getting the answer correct through random guessing is high. True/false tests may be used when you want a trainee to identify a completely true or completely false statement.

Example

Directions: Carefully read the question below and circle True or False to indicate the correct response.

True False 1. The Air Force has a zero tolerance policy for sexual harassment.

True False 2. An officer borrowing money from an enlisted airman is an example of fraternization.

Development Guidelines

Include only one idea in each statement.
Avoid using negatives such as "no" or "not."
Do not use absolutes such as "all," "every," "none," and "never."
Do not use statements containing "some," "any," and "generally."

Matching

A matching test is used to measure a trainee's ability to identify and discriminate among related or similar items. Matching items normally consist of two columns of related items, requiring trainees to match a series of items listed in one column with related items in the other column. It provides a way to test multiple knowledge simultaneously.

Example

Directions: Match the description in the right-hand column with the type of casualty it defines in the left-hand column by placing the identifying letter in the blank space provided.

___ External Hemorrhage	a. Cold, wet, pale and bluish skin (especially around mouth)
___ Shock	b. Bleeding from open laceration
___ Sucking Chest Wound	c. Swelling and discoloration within affected limb
___ Nerve Agent Poisoning	d. Hissing sound coming from open chest wound
___ Internal Hemorrhage	e. Runny nose, difficulty breathing

Development Guidelines

Provide clear, concise directions on how to match the items in the two columns.

Limit test items to a single area and choices to a single subject category.

Fill-in-the-blank

A fill-in-the-blank test item requires trainees to recall and supply one or more key words that have been omitted from the statement. When placed in the appropriate blanks, the word(s) make the statement complete, meaningful, and true.

**Fill-in-the-blank
(Continued)****Example**

Directions: Complete the sentences below by adding the correct word(s) in the blank spaces provided.

1. _____ is an expansive term for military members and includes conduct on- or off-duty, 24 hours a day.
2. The primary method of drug testing is through _____.

Development Guidelines

Leave blanks for key words only.

Keep items brief.

Make all blanks approximately the same size.

Avoid grammatical cues to the correct answer, such as the articles "a" and "an" just before the blank.

Ensure only one correct answer is possible for each blank.

Labeling

Labeling or identification tests are used to measure a trainee's ability to recall and label parts in pictures, schematics, diagrams, or drawings. This form of testing is most often used to measure recognition of equipment components or other concrete objects.

Example

Directions: Identify the parts of the rifle. Record the correct answers in the spaces provided.

**Development Guidelines**

Ensure all sketches, drawings, illustrations, or photos are clear and readable.

Provide sufficient information to indicate what the equipment is and which part is to be labeled.

Clearly point out the parts to be labeled or identified by using lines or arrows.

Ensure only one correct answer is possible for each.

Essay

An essay test requires a written discussion by the trainee. It should be used only when the trainees are expected to think reflectively or creatively, to organize knowledge in the solution of a problem, and to express their solution in writing.

Essay (Continued)**Example**

Directions: Complete the essay question in 500 words or less. Use only one side of the paper to write your response.

Test Item: Describe how the Air Force's policy on human relations relates to the Air Force core values.

Development Guidelines

State the essay item clearly so the trainee knows exactly what type of discussion is expected.

The essay item should ask for comparisons, decisions, solutions, cause-effect relationships, explanations or summary.

Set limits on essay questions such as time or number of words.

Test construction factors

Match learning objective. A test is the primary means of determining if trainees have mastered the objectives. A test is not intended to deceive trainees by testing knowledge and skills not taught in training and not reflected in the objective. Therefore, a valid test item must be written to reflect the behavior in the objective. The level of testing should correlate with the stated level of learning for that portion of the instruction being tested – no higher and no lower. One or more test items may be needed to adequately measure each objective.

Test length. Adequate coverage of the objective is the major factor in determining the length of test that is required. The difficulty, complexity, and scope of behavior in the objective will determine how many test items are required to support an objective. Longer tests are normally more reliable since they usually cover the material better .

Test construction factors (Continued)

Selection and arrangement of test items. Select test items that cover the most essential and significant portions of the material. Test items selected should be clear, concise and well written to minimize misunderstandings. Items of the same type should be grouped together in a test, if possible. Individual test items should also be arranged in approximate order of difficulty, which allows the trainees to progress as far as they can without spending excessive time on difficult items at the first part of the test.

Administrative instructions. Ensure administrative instructions for the test are developed. Include the following:

Detailed instructions on any resources or verbal information the evaluator should provide trainees prior to starting the test.

Detailed instructions on the procedures for administering the test and collecting it when trainees finish or the test period ends.

Detailed instructions directed toward the trainee for completing the test.

Procedures for developing written tests

When developing written tests, follow the steps provided below.

Steps To Develop Written Tests	
Step 1	Determine the test format and the number of items per objective.
Step 2	Generate enough test items for at least two versions of the test. More than one version of a written test must be maintained -- one primary version and at least one version for retesting trainees who fail.
Step 3	Arrange test items (logical, simple-to-complex, and procedural).
Step 4	Write directions for test administration.
Step 5	Review the test for accuracy and completeness.

Test integrity

Tests must be strictly maintained and secured to ensure test integrity in accordance with AFI 36-2605, Air Force Military Personnel Testing System.

Guidelines for Designing Performance Tests

Constructing performance test/ checklist

Performance tests, which require the trainee to perform a task, usually have the format of a checklist. The checklist is developed to correspond to the steps or activities of the task being performed. It should contain observable and measurable activities that can be objectively evaluated. Performance tests are generally rated on a pass/fail basis. During the performance test, an evaluator observes the trainee performing a series of steps or activities while rating the steps on a checklist (process evaluation). An evaluator may also rate the end product of performance on a checklist (product evaluation).

Performance test using a process checklist

When a performance test requires the steps or activities to be rated, a process checklist is used. The process checklist should contain all of the essential steps or activities required for successful performance.

Example

REPORTING PROCEDURES		
Check	Step or Activity	Description of Error
	1. Demonstrates military bearing.	
	2. Demonstrates self-discipline.	
	3. Takes most direct route in/out.	
	4. Executes reporting procedure.	

Guidelines for Development and Use

Use when the performance of steps or activities of a task is to be evaluated.

The steps or activities must be observable.

Define all of the steps or activities of the task being performed.

Sequence steps or activities in order of performance.

Provide space for "checking" the performance of each step or activity.

Provide space for recording and describing errors.

**Performance test
using a product
checklist**

When a performance test requires the product of a task to be evaluated, you will use a product checklist. The product checklist should identify criteria or characteristics of product acceptability.

An example performance test using a partial product checklist follows .

Example: Performance Test Using a Product Checklist

DORMITORY CHECKLIST				
Instructions: Enter one of the following ratings for each item.				
4 - Area Passed X - Area Failed RE - Reevaluation				
A - Mandatory Items Missing		L - Improperly Labeled		
B - Not Buttoned/Snapped/Zipped/Tied		M - Improperly Marked		
D - Dirty/Dusty/Not Shined		N - Not Serviceable		
F - Improperly Folded		S - Not Sized		
G - Not Grounded/Flush		T - Not Tight/Neat		
H - Improperly Aligned or Spaced		U - Unauthorized Item		
I - Improperly Displayed		W - Wet		
Item of Inspection	Product Criteria/Characteristics			Comments
Week of Training	2	3	4	
Personal Living Area				
Order of Display (Shoes)				
Boots				
Low Quarters				
Shower Shoes				
Running Shoes				
AETC Form 341				
Hospital Corners				
Blankets				
Dust Cover				
Pillow				
Mattress Cover				

Guidelines for Construction and Use

Use checklist when the objective requires the trainee to produce something.

Use checklist when the product can be readily evaluated.

Identify the characteristics of the product.

Provide space on the checklist for product rating and comments.

Test construction factors

Match learning objective. Each step on a process checklist must be written to reflect the behavior in the objective. Each product on a product checklist must be written to reflect the product the trainee should produce as supported by the objective's standard.

Administrative instructions. Ensure administrative instructions for the performance test are developed. Include the following:

Detailed instructions on the procedures for administering the performance test and using the performance checklist .

Detailed instructions on any equipment, resources, supplies, or verbal information the evaluator should provide to trainees prior to starting the test.

Detailed instructions directed toward the trainee for completing the test to include any safety considerations, time limits, and evaluation criteria .

An example of administrative instructions follows.

Example: Administrative Instructions**Wear of Uniform Performance Test****Instructions to the Evaluator:**

1. Brief trainees on the following:
 - You are going to be evaluated for grade on the wearing of the Air Force uniform.
 - You must receive NO discrepancies during the inspection to receive a satisfactory grade.
 - You will be evaluated on your ability to:
 - Pay attention to detail.
 - Follow simple instructions.
 - The evaluation will be conducted during an open ranks inspection.
 - Are there any questions?
2. Conduct the evaluation during an open ranks inspection in the 6th WOT.
3. Document evaluation results on a corrected flight roster.
4. Conduct reevaluations within two duty days.
5. Post all evaluation/reevaluation grades on the LAFB Form 105 NLT the end of the next duty day.
6. Counsel trainees who fail the reevaluation, document the LAFB Form 105/105a, and refer them to the section supervisor by the end of the next duty day.
7. If trainees are recycled for failing the reevaluation, they must receive a new evaluation with their new flight. Record third and subsequent evaluations in comment form on the LAFB Form 105a.

**Procedures for
developing
performance tests**

When developing performance test items, follow the steps provided below .

Steps to Develop Performance Tests	
Step 1	List steps/activities (process) or outcome (product).
Step 2	Arrange the activities or outcomes in correct order.
Step 3	Write instructions for test administration.
Step 4	Review the checklist for accuracy and completeness .

Section C

Review Existing Materials

Introduction

Developing training materials can be expensive and time-consuming. Therefore, after developing objectives and tests, review existing training materials to determine if materials exist that will support course objectives. If materials are found, they may have to be modified to fit your needs.

Sources of existing materials

Existing training materials may be obtained from:

- Other agencies [Legal, Military Equal Opportunity (MEO), Public Health, Readiness, Medical]
- Other services
- Other federal agencies
- Commercial/industrial organizations
- Colleges and universities

Types of existing materials

When reviewing existing training materials, you may find them in one of the following forms:

- Printed materials (e.g., lesson plans, textbooks, publications, technical orders, job aids)
- Slides
- Videos
- Audio cassettes
- Computer-based (interactive courseware, ICW)
- Training aids

How to select materials

To standardize the process and allow comparison among materials under review, you may use the following job aid to help select existing materials.

Job Aid for Existing Material Reviews	
	Yes/No
Does the material meet the requirements of the objective(s)?	
Does the material support Air Force doctrine and philosophy ?	
Do test items measure the objectives?	
Is the difficulty level of the material appropriate?	
Is the material accurate?	
Is the material current?	
Is the material proprietary or copyrighted?	

Modifying existing materials

If you find you need to modify existing materials to meet your needs, you will enter the Development Phase (see [Chapter 6](#)) to make these modifications. Modifications may include:

- Expand existing materials to include more detailed information, diagrams, illustrations and examples.
- Delete material that does not support the objective(s).
- Revise material to support the target audience's reading level/ comprehension.
- Update material to correct inaccuracies and to include the most current information such as revised procedures and data.
- Resequence material to make it compatible with the training design.
- Add practical exercises and questions to support learning the material.

Section D

Select Training Method and Media

Introduction

If you cannot find any existing material that fits your needs, you will design new training. The training strategies, training method, and media you select determine the effectiveness and cost-efficiency of the training program. Training design should be determined by what best meets the training needs rather than just using a particular training design that has always been used in your training organization.

Where to read about it

This section covers three topics.

Topic	Page
Determine Training Strategies	108
Select Training Method	110
Select Media	117

Determine Training Strategies

Introduction

Once objectives and test items are written you will design training to support specific training strategies. Training strategies are necessary to maximize the transfer of learning from the training setting to the job. Selection of training strategies must support the learning objectives, trainees' knowledge and ability level, and the overall training philosophy or concept.

Determining training strategies

Training strategies involve the following two issues:

- Trainee participation
- Trainee feedback

Trainee participation

Active trainee participation is essential for learning to take place. Trainees learn by doing, thinking, and feeling through answering questions, discussing, manipulating, and putting ideas together. Learning is a process in which trainees gain skills and knowledge and shape attitudes through their own activities, experiences, and motivations. The training strategy ensures trainees are active in the learning process and can apply or demonstrate what they have learned. For each type of learning, consider using the following strategies to ensure trainees participate in the learning process .

**Trainee participation
(Continued)**

Types of Learning	Training Strategies
Verbal Information	Provide drill and practice to reinforce recall. Use examples and non-examples to reinforce understanding. Provide opportunity to practice the knowledge in context.
Intellectual Skill	Provide scenarios/exercises requiring trainees to classify and categorize information. Provide scenarios/exercises requiring trainees to solve problems or draw conclusions through reasoning, analysis, and judgment.
Motor Skill	Ensure subtasks and tasks are performed under the same conditions and using the same procedures as they would on the job. Demonstrate the task that the trainee is to perform. Have each trainee perform each step (subtask) of the task following the demonstration. Have each trainee perform the entire task with step-by-step guidance. Have each trainee perform the entire task with minimum guidance .
Attitude	Use human modeling to shape trainee attitude. Use guided discussions to shape attitudes.

Trainee feedback

Trainees need feedback on how well they are doing. Feedback not only informs trainees on their progress, but also serves as a valuable source of motivation. The training strategy should provide each trainee with feedback, whether it is the results of a written test or instructor comments during a class or during the performance of a task. During lectures, demonstrations, and practical applications, instructors should ask frequent questions and provide feedback to address any possible trainee misunderstanding about the content or what is expected of the trainee .

Select Training Method

Introduction

The selection of a training method is the primary means of determining how training will be presented to the trainee. Training method is the process used to deliver the training content and to provide guidance for trainees to retain the skills and knowledge imparted. Examples include lecture, demonstration, practical application, self-study, and CBT. The methods you select will have a direct impact on both the qualities of the training program and its cost-effectiveness .

Considerations for selecting a training method

When selecting a training method, you must consider a number of factors based on instructional requirements:

- Objectives/learning outcomes
- Transfer of learning
- Resource constraints

Objectives/ learning outcomes

The training method selected should stimulate learning to enable mastery of the objectives. This can be done by selecting a training method that complements the behavior of the objective. For example, if the objective involves performance of a task, the training method should include some form of practical application. Likewise, an objective requiring the trainee to recall information may best be presented via lecture.

**Objectives/
learning outcomes
(Continued)**

Learning Outcome	Training Method
Verbal Information	Lecture Self-study CBT
Intellectual Skills	Lecture Guided discussion Practical application Self-study CBT
Motor Skills	Demonstration Practical application CBT
Attitudes	Guided discussion Demonstration CBT

**Transfer of
learning**

Transfer of learning is the extent to which what is trained is carried over to the job. Training should strive to provide as realistic conditions as possible to the job to increase trainee retention of the material and maximize transfer of learning. Trainees also learn best when they actively participate in training. When trainees only use one sense during training, such as hearing (e.g., lecture), transfer of learning is low. Transfer of learning increases as trainees use additional senses and is maximized when trainees can experience performing a task.

**Transfer of learning
(Continued)**

Training Method	Sense			
	Hear	See	Discuss	Experience
Lecture	X			
Demonstration	X	X		
Guided Discussion	X		X	
Practical Application	X	X		X
Self-study		X		
CBT	X	X		X

Resource constraints

The training method selected must be able to be supported by available time, instructors, facilities, equipment, and funding. While resource constraints can become the deciding factor, you should first consider objectives and transfer of learning when selecting a training method. This will ensure every effort is made to base the selection on instructional factors.

Training method options

Once you have designed the training activities, use the information to select the best training method(s) to achieve the objective. There are many training methods you can select. Some options follow.

Training Methods	
Lecture	<p>A formal or semiformal oral presentation of information delivered by an instructor. Primarily used to impart verbal information and intellectual skills such as facts, concepts, problems, relationships, rules, and principles. Advantages:</p> <ul style="list-style-type: none"> Particularly useful for reaching a large audience at one time. Enables learning of difficult material under supervision of instructor . Cost-effective to prepare and revise materials. <p>Disadvantages:</p> <ul style="list-style-type: none"> Can limit individualized feedback and reinforcement to trainees in large groups. Has a low transfer of learning unless integrated with other training methods supported by media (e.g., demonstration, guided discussion, practical application) .
Demonstration	<p>Presentation or portrayal of a sequence of events to demonstrate a procedure, technique, or operation; frequently used in conjunction with lecture. Demonstrations may include presentations of models, videos, maps, or a live demonstration by an instructor.</p> <p>Advantages:</p> <ul style="list-style-type: none"> Increases trainee retention because trainee hears and sees sequence of events. Allows performance standards to be demonstrated. Provides immediate feedback because trainee can observe correct sequence of events . Cost-effective to prepare and revise materials. <p>Disadvantages:</p> <ul style="list-style-type: none"> May be difficult for all trainees to see demonstration in a large group. Requires additional preparation time on the part of instructor.

Training Methods (Continued)	
Guided discussion	<p>Instructor-led interactions that involve participation by all trainees through a variety of exercises such as case study and role-playing. It is highly effective for analyzing, debating, exploring a topic, value, or attitude.</p> <p>Advantages:</p> <ul style="list-style-type: none">Highly interactive, allowing trainee interaction with instructor and other trainees.Increases retention and transfer of learning because trainees actively participate in analysis or exploration of a topic.Enables instructor to evaluate student progress.Provides immediate feedback.Cost-effective to prepare and revise materials. <p>Disadvantages:</p> <ul style="list-style-type: none">Must be closely supervised to ensure all trainees participate.

Training Methods (Continued)	
Practical application	<p>Trainees apply previously learned knowledge or skills under controlled conditions with close instructor supervision. Trainees may interact with equipment, data, or persons, as necessary, to attain training objectives. This includes interaction with actual equipment or job materials (e.g., forms, reports, references).</p> <p>Advantages:</p> <ul style="list-style-type: none">Highly interactive and holds trainee attention because trainees are actively participating in performing real-world task.Has highest retention, transfer of learning, and training fidelity.Uses actual equipment or job materials to train the procedures.Simulates real-world situations and conditions.Enables instructors to evaluate trainee progress and provide feedback and remedial instruction prior to testing . <p>Disadvantages:</p> <ul style="list-style-type: none">May require costly resources, such as equipment and facilities, that are difficult to obtain.Time-consuming to develop and conduct.Requires lengthy preparation time.May require additional instructors and staff to implement.Must be highly structured to ensure training time is effectively used.

Training Methods (Continued)	
Self study	<p>Trainees review and study instructional materials designed for this purpose at their own pace.</p> <p>Advantages:</p> <ul style="list-style-type: none"> Cost-effective to prepare and revise materials. May be appropriate if instructors are not available. May be appropriate if there is a lack of adequate facilities and equipment to handle trainee flow. May be retained by trainee and used as a training or job aid. <p>Disadvantages:</p> <ul style="list-style-type: none"> Provides limited interaction with instructor and no interaction with other trainees. Trainees' understanding of material can not be relied upon until intervention by instructor; critical tasks should not be trained using this method.
Computer-based training (CBT)	<p>CBT, also referred to as interactive courseware (ICW), involves trainees interacting, at their own pace, to instruction presented through a variety of media controlled and monitored by a computer.</p> <p>Advantages:</p> <ul style="list-style-type: none"> May increase the level of trainee interactivity with instructional materials . Effective method of providing performance measurement tools for assessing student progress and mastery of learning objectives . May increase student retention of instruction over time. May reduce training time. May reduce instructor requirements. May increase the transfer of learning to the operational job environment. <p>Disadvantages:</p> <ul style="list-style-type: none"> Usually requires significant advanced planning and lead-time. Requires reliable and consistent access to a properly configured computer and availability of technical support. Revisions sometimes require significant time, effort, and resources. Some degree of computer literacy and proficiency training might be required for students to ensure their effective use of the instructional media.

Select Media

Introduction

Although selection of training methods and media is discussed individually, they cannot always be considered separately. No single medium is the most appropriate choice for every training situation. Media should complement course topics and the training methods selected. Media are the means used to communicate information and are selected to enhance, support, and supplement presentation of the instruction. Media can improve trainee attention during training and increase transfer of learning by appealing to many senses (e.g., hearing, seeing, experiencing). Media must be selected to support class size to ensure all trainees can see or hear the information being presented .

Types of media

There are several types of training media, as shown below.

Types of Media	Examples
Traditional audiovisual devices	Chalkboards Transparencies Slides Videotapes Film strips Flip charts

**Types of media
(Continued)**

Types of Media	Examples
Printed materials	Diagrams Charts Workbooks Study guides Training manuals Programmed instruction booklets Technical orders
Training devices	Actual equipment Models Exhibits
ICW	CBT

**Media
characteristics**

Media have various characteristics that make them either suitable or unsuitable for particular training situations. Consider these characteristics carefully to ensure that the appropriate media are selected to support the training program. The advantages and limitations of each type of media follow.

**Media
characteristics
(Continued)**

Media	Advantages	Limitations
Printed Materials	Wide variety of applications, both indoors and out Easy to prepare and use Include common types of materials Require little or no additional equipment Inexpensive	Must be displayed so trainees can see, read, and interpret them
Overhead Transparencies	Easy to prepare and use Can present information in systematic, developmental sequences Use simple-to-operate projector Presentation rate controlled by instructor Particularly useful with large groups Inexpensive	Require overhead projector Require darkened room and electricity source

**Media
characteristics
(Continued)**

Media	Advantages	Limitations
35mm Slides	<p>Provide colorful, realistic reproductions of original subjects</p> <p>Prepared with any 35mm camera for most uses</p> <p>Easy to prepare, revise, and use</p> <p>Easily handled, stored, and rearranged for various uses</p> <p>Increased usefulness with tray storage and remote control by presenter</p>	<p>Require slide projector and, possibly, camera</p> <p>May require skill in photography</p> <p>Require darkened room and electricity source</p> <p>Require preparation to ensure slides stay in proper order</p> <p>May be costly if photographs are developed</p>
Audiotape	<p>Easy to prepare with regular tape recorders</p> <p>Equipment for use is compact, portable, and easy to operate</p> <p>Flexible and adaptable as either individual elements of instruction or in support of programmed materials</p> <p>Duplication easy and economical</p>	<p>Require lengthy development time to script, record, edit</p> <p>Have a tendency for overuse, as lecture or oral textbook reading</p> <p>Fixed rate of information flow</p> <p>Require electricity source and sound system</p> <p>Must be carefully integrated with other media</p>

**Media
characteristics
(Continued)**

Media	Advantages	Limitations
Video and Film	Useful in describing motion, showing relationships, and giving impact to topic Videotape reusable May use special filming techniques (animation, time-lapse) Standardized film projector available everywhere	Require lengthy development time to script, record, edit High cost for studio production equipment Require film projector or VCR, large screen, and electricity source Resolution limited with video for fine detail.
ICW	Present text information and graphic images Provide trainee interaction with subject matter Provide record of responses Adapts instruction to needs of trainee May be used for self-paced instruction or as supplement to instruction	Require computers and electricity source Require programmers and graphic artists to design program Time-consuming and costly to design

**Guidelines for
selecting media**

Several guidelines for media selection are:

Select media that effectively support and enhance the learning objectives.

Select media that do not conflict with the specific training environment .

Select media that support the training strategy.

Select media with time, availability of resources, and funding in mind.

Section E

Update Course Chart

Introduction

After learning objectives have been grouped and sequenced, a framework or structure for each lesson may be determined. A course chart presents the structure of a course, breaking it down by instructional hour and instructional day. The course chart for BMT exists. If there are any revisions to the curriculum, training time, or administrative time, revisions must be made to update the course chart.

Components of a course chart

A course chart contains, at a minimum, the following:

- Lesson title
- Lesson times
- Number of training days
- Scheduled breaks
- Training hours
- Administrative hours

Steps for creating a course chart

When creating a course chart from scratch, perform the following steps:

**Steps for creating a
course chart
(Continued)**

**Step 1: Organize
objective s**

Organize terminal objectives and their supporting enabling objectives into individual lesson plans. Review the list of sequenced objectives (see Section A) and chunk them into information deemed appropriate and manageable for a single lesson plan. One period of instruction should convey a block of information broken into discrete topics. If enabling objectives support the lesson, generally each topic will support an individual enabling objective.

Select learning objectives that are closely related; combined, they should make a self-contained group suitable for an individual lesson .

Combine learning objectives so that the group has a natural beginning and ending point.

Look for "natural breaks" in the sequenced objectives that indicate major changes in subject matter, for example: one topic to another, going from theory/knowledge to performance/skill, etc. Group learning objectives by these "natural breaks" and organize them into individual lesson plans .

**Step 2: Assign
lesson titles**

Assign lesson titles that are meaningful and relate to the lesson content or purpose.

**Step 3: Estimate
training time**

Estimate the training time required to present each lesson. Base this on trainee throughput, training method, and the complexity of the subject matter. Scheduled and unscheduled training time must be accounted for .

**Steps for creating a
course chart
(Continued)**

Step 4: Detail administrative functions	Administrative time includes processing, sleep, meals, transit, briefings, showers, etc. BMT is a unique environment in which training is supported by a 24-hour per day schedule. The training environment is highly structured and trainees are under constant supervision, so every hour in the course must be accounted for. All administrative functions must be detailed in the course chart.
Step 5: Estimate administrative time	Estimate the time it will take to complete administrative functions. Base this on trainee throughput and resource support.
Step 6: Total training/ administrative time	Add the hours of training and administrative time to get totals for each.

Example

A partial, example course chart follows.

Example: Course Chart

COURSE CHART			
NUMBER LMABM9T000	TITLE BASIC MILITARY TRAINING		PDS CODE 998
SUPERSEDES COURSE CHART(S) LMABM9T000, January 2000		APPLICABLE TRAINING STANDARD CTS LMABM9T000, February 2001	INSTRUCTIONAL DESIGN Group Lock Step
LOCATION OF TRAINING LACKLAND AFB, TEXAS		WING/GROUP/DEPARTMENT 37 TRW/737 TRG/737 TRSS/TSDC	
COURSE SECURITY CLASSIFICATION NUNCLASSIFIED	OPR/APPROVAL DATE 737 TRSS/TSDC 20010126	NUMBER OF ATTACHED TABLES 2	
COURSE LENGTH (30 ACADEMIC DAYS) WARTIME COURSE LENGTH (30 ACADEMIC DAYS)			HOURS
Technical Training			
Academics			49.5
Dormitory			100.75
Drill			41.75
Warrior Week/Field Training Experience (Excludes Meals, Transit, and Sleep - 55.25 Hours Total)			67.25
Other Training/Administrative Time			
Briefings and Orientations			46.25
Processing			77.5
PC			45.5
Meals			67.5
Transit			18.5
Sleep			248.00
Miscellaneous (Details, Administrative, Fire Drills, etc.)			109.5
TOTAL			872.00
REMARKS			
<p>Effective Date: 1 February 2001; effective with flights entering training on or after 1 February 2001.</p> <p>Academic instruction is scheduled IAW locally published weekly activity schedule.</p> <p>This course is programmed on a 30 day, 24 hour per day schedule. 152 hours are conducted outside of this time frame, which includes 69.5 hours that are conducted during the "0" week of training (prior to the scheduled beginning of the course).</p> <p>Some unscheduled required activities may be performed concurrent with other activities (both scheduled and unscheduled), if multiple instructors are working with a single flight.</p> <p>This course chart revision has no impact on resources.</p> <p>This course is CCAF degree applicable for 4.0 hours in Physical Education.</p> <p>The January 200 Course Chart and Wartime Course Chart are applicable during this validation period.</p> <p style="text-align: center;">Approved/Disapproved</p> <p style="text-align: center;">JOHN F. DOE, Col, USAF Commander</p> <p>Training Manager: MSgt J. Smith/737 TRSS/TSDC/DSN 555-1234</p>			
TABLE 1 - MAJOR ITEMS OF EQUIPMENT			
TRAINING EQUIPMENT: NONE			
TEST EQUIPMENT: NONE			

Example: Course Chart (Continued)***Block I - Processing/Military Training (Week 1)***

<u>Weekly Scheduled Training</u>	<u>120.00 Hours TT</u>
Records/ID Card Processing	(2.5 hrs)
Medical/Dental Processing	(5.0 hrs)
Career Guidance	(4.0 hrs)
Chapel Orientation	(1.5 hrs)
Blood Donors	(4.0 hrs)
Immunizations	(1.0 hr)
Intro to Classroom Procedures	(1.0 hr)
MGIB 1	(1.0 hr)
Dorm Guard Class	(2.0 hrs)
First Week Orientation	(1.5 hrs)
Dorm Application	(5.0 hrs)
Dorm Prep	(2.5 hrs)
PC	(7.5 hrs)
Flight Drill	(3.0 hrs)
Individual drill (listed below) may be taught in any order, but must be taught by the end of this week.	
Position of Attention	(0.5 hr)
Parade Rest	(0.75 hr)
Present Arms	(0.5 hr)
Right/Left Face	(0.75 hr)
About Face	(0.5 hr)
Transit	(5.5 hrs)
Evening Brief	(5.0 hrs)
Meals	(10.0 hrs)
Showers	(2.5 hrs)
Details	(2.5 hrs)
Reveille	(1.25 hrs)
Sleeping	(38.75 hrs)
Squadron Training Time (STT)	(13.0 hrs)

<u>Weekend Scheduled Training</u>	<u>1.5 Hours TT</u>
PC (Saturday)	(1.5 hrs)

<u>Unscheduled Required Training</u>	<u>18.75 Hours TT</u>
Fire Drill (1 WOT)	(0.25 hr)
Linen Exchange Bed	(0.5 hr)
Free Dorm Inspection - All 4 Areas	(8.0 hrs)
Turn-In Field Jackets	(0.25 hr)
Pick-up Shot Records	(0.25 hr)
Height/Weight Checks	(0.75 hr)
Body Fat Measurements	(0.5 hr)
Boot Shine	(1.0 hr)
Trainee Signatures in Database	(4.0 hrs)
Religious Preference Roster	(0.25 hr)
Dry Cleaning Briefing	(0.5 hr)
Reporting Procedures	(1.5 hrs)
Dorm Maintenance	(1.0 hr)

Total Weekly Training Time **120.00 Hours**

Total Training Required for Week 1 **140.25 Hours**

Training Beyond the 120 Hour Schedule (Scheduled & Unscheduled) 20.25 Hours

Time Allotted for Unscheduled Required Training (Squadron Training Time - STT) 13.0 Hours

Difference (Training That Must BE Completed on the Weekend) **7.25 Hours**

Section F

Update Course Training Plan

Introduction

A Course Training Plan (CTP) for BMT exists. As you revise curriculum or add curriculum, you must update the CTP to reflect these changes. This includes any changes to resource requirements in support of the course. This is generally done at the end of the Design Phase when you have adequate data to document your plan for the training program. Development of the CTP may possibly continue into the Development Phase before it is finalized .

What is a CTP?

A CTP provides the basis for planning, programming, and implementing training. It is the justification that describes the training program in terms of:

- Purpose
- Type of training
- Training design
- Training content
- Course parameters
- Resources required

Purpose of CTP

A well-developed CTP can serve several purposes depending on the nature and scope of the training itself. Some of its purposes are to:

- Describe and document the training program.
- Identify resources that are required to operate and support the training program.
- Serve as the approval document to operate the training program.

Who is responsible?

Managers are directly responsible for developing a CTP to describe and document the training program. To revise the plan, the manager will need input from curriculum developers.

CTP format and content

The CTP generally includes an administrative section, a narrative text, annexes, and appendices that justify and support the resource requirements and detail schedules of the plan. When updating the CTP, revise only those sections affected by revisions or additions to the BMT program.

Narrative

The narrative part of the CTP provides an overview of the information in the annexes and appendixes. It describes the rationale, assumptions, and conditions pertaining to the planned course. The following items are included in the narrative:

Purpose	The purpose of the CTP.
Course Description/ Program Data	<p>A brief description of the purpose of the course.</p> <p>The instructional design of the course as shown on the course chart. If a major subject area was changed or added, indicate the change here.</p> <p>The security classification of the course.</p>
Control Documents	The control documents controlling the content of the course and where they are contained in the CTP.
Trainee Evaluation	Requirements for trainee evaluation including written and performance tests. If a test was added or deleted from the course, indicate the change here.

**Narrative
(Continued)**

Program Evaluation	Tools, both internal and external, used to evaluate the effectiveness of the course. If the evaluation program was revised, such as the inclusion of a new survey, indicate the change here.
Trainee Training Requirements and Scheduling Constraints	<p>Total trainee training requirements and scheduling constraints such as :</p> <ul style="list-style-type: none">TimeFacility spaceDormitory occupancyExternal agency requirements <p>If anything has changed that affects the training schedule, indicate the scheduling constraint here.</p>
Manpower and Personnel	The manpower required to support, develop, and conduct the training program to include qualifications or selection requirements of personnel. If the manpower structure supporting BMT changed, or the selection process changed, indicate the change here.
Facilities	A description of existing training facilities and cross-utilization of facilities. If facilities do not satisfy training requirements, indicate requirements for additional training space or modification to existing facilities. If a revision of the course is made that affects facilities, indicate the change here.

**Narrative
(Continued)**

Logistics Support	Major items of training equipment and support required to conduct the course. If logistical resources are not adequate to support the course, indicate what is needed. If a revision of the course is made that affects logistics support, indicate the change here.
Comm-Computer System Requirements	Requirements and actions taken to acquire automatic data communications requirements and exploit basic technology in support of the course. As technology changes, such as automated computer programs for tracking trainee data, indicate the requirements to support the program here.
Instructional Materials	Summary of the materials required to support the training course. If materials are added, deleted, or revised, indicate the change here.
Comptroller	Funding requirements and cost rationale to support the instructional design of the course. If the course is revised and the use of Operation and Maintenance (O&M) funds change, indicate the change here.
Environmental Assessment	Environmental impact assessment is required for any proposed change in a training course that would result in a change in average daily student load, number of permanent party personnel, chemical processes or chemical materials, or new facility additions or construction.

**Narrative
(Continued)****Wartime
Course Impact**

Summary of any differences in the course between wartime and peacetime conditions.

Annexes

Annexes provide detailed documentation of resource requirements identified in the narrative portion of the CTP. A complex annex may be divided into appendices.

**Course Control
Document s**

Course Training Standard (CTS). The CTS, contained in the CTP (see [Chapter 4](#), Section D), establishes the training requirements for the course. If there are changes to the CTS, provide a brief summary of the major changes affecting resources.

Course Chart. The course chart (see [Chapter 5](#), Section E) presents the entire schedule of training. If changes were made to the training schedule, provide a brief summary of the major changes affecting resources.

**Annexes
(Continued)**

Course Evaluation	<p>Contains pertinent information used to evaluate the effectiveness of the course including:</p> <p>Measurement Plan. The measurement plan lists the written and performance tests, by CTS, for the course. If there are revisions to the CTS and where tests are administered, indicate the change here.</p> <p>Training Evaluation Plan. Details the methods and rationale used to measure the training and services provided during the course. If the evaluation plan changes, to include survey administration, evaluation schedule, evaluation criteria, reporting procedures, and distribution, indicate the change here.</p>
Manpower	<p>Manpower Standards and Formulas. Manpower authorizations for the course and the formulas used to arrive at the manpower numbers. If manpower or instructor requirements change, indicate the change here.</p> <p>Military Training Instructor (MTI) Selection Criteria. Criteria used to screen and select MTIs. If screening or selection criteria change, indicate the change here.</p>

**Annexes
(Continued)**

Facilities	<p>The facilities annex should address the following areas, as appropriate :</p> <p>Major Facilities in Use RH&T Layout Warrior Week Encampment “The Torch” Layout The Field Training Experience (FTX) Layout Confidence Course Layout Other support facilities</p> <p>If any changes to facilities are required or additional space is needed, indicate the change here.</p>
Logistics	<p>The logistics annex includes requirements for training and support equipment, logistics support, and communications-computer systems requirements.</p> <p>Training Equipment. Reflect any changes to training and support equipment requirements here.</p> <p>Logistics Support Requirements. Reflect any changes to logistics support requirements here.</p> <p>Comm-Computer Systems Requirements. Reflect any changes to comm-computer systems requirements here.</p>
Comptroller	Reflect any changes to funding support here.
Environmental Assessments	Reflect any changes to environmental impact analysis requirements here.

Chapter 6

DEVELOPMENT

Overview

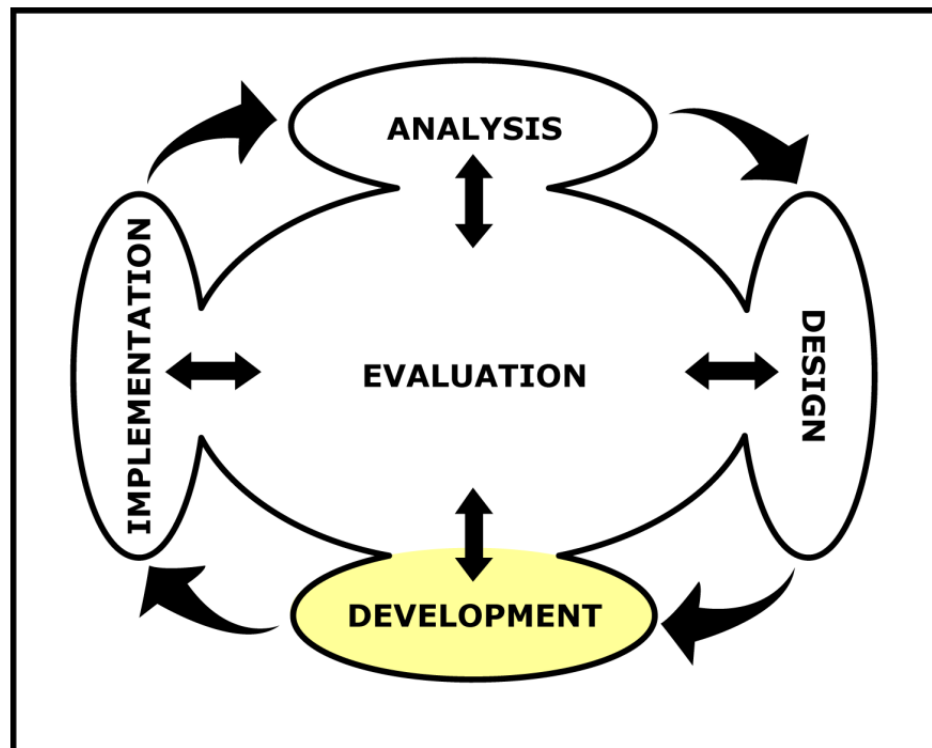
Introduction

The Development Phase builds upon the data gathered during the Analysis and Design Phases. After objectives, tests, and instructional strategies have been determined, the training materials may be fleshed out to develop lesson plans and accompanying trainee materials.

Where are you in the process?

An ISD model with the Development Phase highlighted is presented in Figure 8 to help you visualize where you are in the ISD process.

Figure 8 Development Phase



Objectives

The objectives of this chapter are contained in five sections.

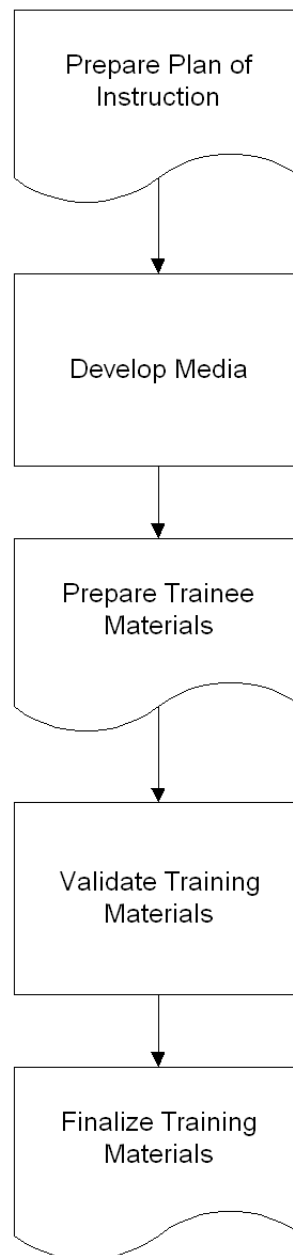
Section	Title	Page
A	Prepare Plan of Instruction	138
B	Develop Media	157
C	Prepare Trainee Materials	160
D	Validate Training Materials	162
E	Finalize Training Materials	172

**Development
process flowchart**

The Development Phase of ISD is depicted in the flowchart (Figure 9) below as a quick reminder of the activities involved in the development process.

Figure 9 Development Process Flowchart

Development



Section A

Prepare Plan of Instruction

Introduction

A Plan of Instruction (POI) serves as the overall plan or blueprint for conducting training in a given course. POIs ensure training is standardized. The POI serves as a control document for planning, organizing, and conducting training .

POI contents

The POI serves as a course control document, organized by units and lessons in the preferred sequence of instruction. It lists learning objectives, support materials needed, and training time. A POI may be developed from scratch for new training; if training is revised, the POI must be updated to reflect these changes. The POI consists of two parts:

Part I of the POI is prepared on AETC Form 133, Plan of Instruction/ Lesson Plan Part I. Part I contains administrative information supporting the lesson plan.

Part II of the POI contains the instructional content.

**POI/Lesson Plan
Part I**

Part I of the POI contains the following elements.

Titles	Name of instructor Course title Unit or block title
---------------	---

**POI/Lesson Plan
Part I (Continued)**

Course content	Lesson title Objectives - record all of the objectives supporting the lesson. Course Training Standard (CTS) - cross-reference the CTS to the POI to show which tasks and knowledge support the lesson . Trainee measurement: PC - progress check P - performance test W - written measurement Lesson time Lesson topics - list the topics that will be covered in the lesson.
---------------------------	--

**POI/Lesson
Plan Part I
(Continued)****Support
materials
and
guidance**

Student instructional materials - list any references, workbooks, or materials trainees will refer to in support of the lesson. List any resources trainees will be required to use in support of practical application such as first aid kit, bandages, field dressing, etc.

Audiovisual aids - list any audiovisual aids, such as PowerPoint presentations, the instructor will use to teach the lesson.

Training method(s) and time - list the training methods and times for each activity :

Lecture

Guided discussion

Application

Progress check (PC)

Instructional guidance:

Preparation - list any additional references instructors may use to prepare for instruction.

Presentation - list the facilities required to present the training such as FTX site, classroom, encampment academic tents, etc. List the type of presentation such as briefing, video, etc.

Evaluation - list the method of evaluation and any instructions for evaluation:

Performance test

PC

Written test

Instructor requirements - list the number of instructors required to teach the lesson and the number and type of support personnel, as required.

Application instruction - if a practical application will be conducted, detail any instructions for setting up and conducting the application.

Additional information - list any additional information the instructor needs to implement the training.

**POI/Lesson Plan
Part I (Continued)**

Approval	Lesson plan approval date and signature POI number Block Unit Date Page number
-----------------	---

Example

A partial example of a POI/Lesson Plan Part I follows.

Example: POI/Lesson Plan Part I

PLAN OF INSTRUCTION/LESSON PLAN PART I				
NAME OF INSTRUCTOR		COURSE TITLES		
		USAF Basic Military Training		
BLOCK TITLE				
Warrior Week				
1. COURSE CONTENT			2. TIME	
8. Self-Aid and Buddy Care CTS: 3c Meas: P, PC OBJECTIVE: Given a casualty in a field setting, perform basic first aid. SUPPORT MATERIALS AND GUIDANCE <u>Student Instructional Materials</u> Bandage, Elastic (Ace 6" Wrap) – 6510010972199 Field Dressing (4X7) – 6510-00-159-4883 <u>Audiovisual Aids</u> VHS Videos – "Intro to Combat Medicine" (8 min.) Pin# 504434 PowerPoint Presentation <u>Training Methods</u> Active Learning/Informal Lecture/Demonstration (2.5 hrs.) Performance (2.0 hrs.) Progress Check (.5 hr.)			5.0	
SUPERVISOR APPROVAL OF LESSON PLAN				
SIGNATURE AND DATE		SIGNATURE AND DATE		
POI NUMBER	BLOCK	UNIT	DATE	PAGE NO.
LMABM9T000	III	8	1 June 2001	229

Example: POI/Lesson Plan Part I (Continued)**COURSE CONTENT**Instructional Guidance cont.

1. PREPARATION: AFI 36-2238, *Self-Aid and Buddy Care Training*; AFH 36-2218 Vol. 1; AFJMAN 44-149, *Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries*; AFPAM 36-2241, Vol. I, *Performance Fitness Examination Study Guide*; FM 8-23, *Medical Specialist*; FM 8-35 *Evacuation of the Sick and Wounded*; FM 21-10, *Field Hygiene and Sanitation*; FM 21-11, *First Aid for Soldiers*; and AFMAN 10-100, *Airman's Manual*.

2. PRESENTATION: Encampment academic tents/briefing

3. EVALUATION: Practical exercise, Progress Check (PC). Administer the PC (Attachment 2) after the lesson and/or application. The PC is non-punitive and no action is taken for trainees that fail. Results are used to provide feedback to the instructor(s) on lesson presentation. Conduct a critique immediately after the PC.

INSTRUCTOR REQUIREMENTS: Two briefing instructors. Refer to [Attachment 1](#) for application portion of the lesson. The "Intro to Combat Medicine" video must be shown either in its entirety as part of the introduction or shown throughout the Lesson Plan (POI Part II) to support the material being covered.

Additional Information

Before every lesson/orientation, cover any necessary preliminary information. This includes, but is not limited to, introducing yourself, appointments, choral responses, emergency evacuation procedures, trainees taking off their BDU shirts, and ensuring trainees can see and hear you. If a chalkboard or dry erase board is available, print your name, and title of lesson. Stress the importance of risk management as applicable.

Provide trainees a 10-minute break for every 50 minutes of instruction.

Content of attention, motivation, and remotivation steps (if provided) may be replaced at the discretion of the instructor, as long as these steps are not omitted from the presentation.

POI NUMBER	BLOCK	UNIT	DATE	PAGE NO.
LMABM9T000	III	8	1 June 2001	230

**POI Part II
Teaching Guide**

Part II of the POI contains the instructional content of the lesson plan. The instructor uses this to prepare, rehearse, and guide the training activities in the lesson. Ideally, the teaching guide should include all of the information the instructor needs to teach the lesson to avoid having to refer to other reference materials to prepare for the class .

There are three parts to the teaching guide:

Title	Page
Introduction	145
Body	146
Conclusion	149

Introduction

Introduction	The Introduction contains, as appropriate, a review, attention, overview, motivation, and transition.
---------------------	---

Attention	The Attention should be developed to capture trainee interest in the topic.
------------------	---

Overview	The Overview should present the topics that will be covered in the lesson. Generally, each topic will be supported by a section of the instruction supporting a single objective. Number each topic to correspond to its number in the Body of the instruction.
-----------------	---

Objective	Present learning objectives early in the lesson to provide a focus and to inform trainees what performance is expected of them.
------------------	---

Motivation	The Motivation should build on the Attention by relating the lesson content to trainees. It should inform trainees why this information is important to them or how it is relevant to being an enlisted member of the Air Force.
-------------------	--

Body

Introduction

The Body includes the instructional presentation, application, and evaluation, as applicable. The Body is the detailed script of the material to be taught. The Body includes all of the information necessary for trainees to master the specified objectives.

Topics of Instruction

The Body is broken into topics of instruction, as presented in the Overview section of the Introduction. Each topic should present a main idea and should follow a logical sequence. If a lesson is supported by enabling objectives, in general, each topic may support a separate objective. In this way, once learning objectives are sequenced in the Design Phase, the instructional content may be fleshed out in the lesson plan to support each objective. This provides the content for each topic of a lesson and ensures the instructional material flows in a logical sequence to maximize learning. Chunk topics so no topic is more than 50 minutes in length. A standard one-hour lesson is broken down by 50 minutes of instruction and a 10-minute break. Present information in the Body on the left-hand side of the page.

Transitions

Transitions tie together main ideas in the lesson. The instructor can convey relevance of course materials in transitions. Transitions should reinforce the conceptual framework of the lesson, allow the instructor to use questioning techniques and gather feedback from trainees, and allow a smooth flow of material. Present Transitions on the right-hand side of the page so they stand out from the instructional content.

Cues

Cues can assist the instructor in the presentation of the instruction. Cues should be placed in the right-hand side of the page so they stand out from the instructional content. There are several types of cues, presented below.

Media cue	Media cues indicate what media (e.g., slide, transparency, model) to use and when to present it during instruction.
------------------	---

Cues (Continued)

Demonstration cue	Demonstration cues indicate when to conduct a demonstration during instruction.
Question cue	Question cues remind instructors to ask trainees questions. Instructors should pose questions continually throughout training to maintain rapport, stimulate interaction, check understanding, receive feedback, and generate trainee interest.
Instructor notes	Instructor notes can include any information pertinent to the conduct of the lesson such as points to emphasize, examples, etc.

Attachments - practical application exercise

If the lesson calls for a practical application in which trainees practice performing the tasks covered in instruction, include the exercise as an Attachment to the teaching guide. (Practical applications are identified in the Application section of the Conclusion.) Practical application exercises contain the following components :

Objective	Include the objective of the practical application.
Trainee briefing	Provide complete instructions on briefing trainees as to the conduct of the exercise. Include situation (as applicable), assignments, procedures, evaluation criteria, and commands .
Equipment	List all of the equipment required by trainees and instructor/support staff to conduct the exercise.

**Attachments -
practical
application exercise
(Continued)**

Personnel	List all of the personnel required to conduct the exercise including trainees and instructor/support staff. Include assignments or roles trainees will play, as applicable.
Exercise actions	Provide a complete description of exercise procedures including evaluation criteria and safety requirements.
Debrief	Provide a detailed description of topics that should be covered in the debrief of trainee performance.

Conclusion

Introduction	The Conclusion contains, as appropriate, the summary, study assignments, remotivation, closing, and application.
Summary	The Summary restates the main topics discussed in the lesson. Number each topic to correspond to its number in the Body of the instruction.
Study assignments	List any study assignments to trainees, as applicable. Trainees must know what self-study assignments are required of the course.
Remotivation	The Remotivation reiterates why the information is important for trainees to know as well as its overall relevance to the Air Force mission.
Closure	The Closure should emphasize and reinforce key points and provide closure to the instruction.
Application	If trainees will be provided practice in performing the topics covered in the lesson, the Application explains when and where trainees will do so in a practical application .
Example	A partial example of a POI Part II Teaching Guide follows.

Example: POI Part II – Teaching Guide

<p align="center">SELF-AID AND BUDDY CARE POI Part II Teaching Guide, 1 June 2001 Effective 1 June 2001</p>	
<p align="center">INTRODUCTION (12 min.)</p>	
<p>ATTENTION: <u>Warning: This presentation contains graphic images.</u> <i>Show the video “Intro to Combat Medicine” (8 min.)</i></p> <p>OVERVIEW: <i>Today we will cover:</i></p> <ol style="list-style-type: none"> 1. Triage 2. Casualty Assessment 3. External Hemorrhage <p>OBJECTIVE: Given a casualty in a field setting, perform basic first aid.</p> <p>MOTIVATION: <i>Imagine yourself in an accident. First, you’re unconscious, then you awake and see a circle of people just standing around you not knowing what to do. You slowly drift back into a peaceful unconsciousness. Ten minutes later, help arrives. Unfortunately, you’ve been pronounced DOA, time of death...2 minutes prior to the paramedics arriving. If only...</i></p>	
<p align="center">BODY (2.0 hrs., 15 min.)</p>	
<p>1. TRIAGE</p> <p>a. Definition/Purpose</p> <ol style="list-style-type: none"> (1) French word meaning “to sort.” (2) Group victims according to seriousness of injury, type of injury, likelihood of survival. (3) The goal of military triage is to do the greatest good for the greatest number. 	<p>Show Slide #1</p>

Example: POI Part II – Teaching Guide (Continued)

TRANSITION: In order to sort casualties, you must be able to assess the severity of their injuries.

b. Casualty Assessment

Show Slide #2

(1) Primary Survey - Purpose is to find and treat the most life threatening emergencies. Examples:

(a) Opening an airway in an unconscious person.

(b) Stopping arterial bleeding.

(2) Secondary Survey - Purpose is to uncover all other injuries and attempt to stabilize and treat the problems found. Examples:

(a) Splinting fractures.

(b) Stopping external bleeding.

(c) Treating burn injuries.

TRANSITION: Once you have assessed casualties, you can apply triage. To do so, you must know the categories of triage.

Example: POI Part II – Teaching Guide (Continued)**c. Triage Categories**

Show Slide #3

(1) Minimal (Green) - casualties can be returned to duty with minimal treatment; no priority for treatment. Examples:

- (a) Small lacerations.
- (b) Contusions with controlled bleeding.

(2) Immediate (Red) - victims whose conditions are so urgent that immediate treatment is needed to save life or limb. This is the highest priority for treatment. Examples:

- (a) Hemorrhage from easily controlled site.
- (b) Open chest or abdominal wound.
- (c) Rapidly correctable respiratory defects.

2. CASUALTY ASSESSMENT

Demonstrate using trainee as 'casualty'

- a. Establish responsiveness
- b. Check airway, breathing, and circulation (ABCs)
- c. Check for signs and symptoms

(1) Signs - Any injury that can be observed; check back for wounds and weapons.

(2) Symptoms - Any injuries that casualty feels (not observable) .

Example: POI Part II – Teaching Guide (Continued)

TRANSITION: There are several types of injuries you may come across in a field environment. An external hemorrhage can be life threatening and must be treated immediately.

3. EXTERNAL HEMORRHAGE**a. Signs and symptoms**

- (1) Bleeding from open laceration, puncture, amputation, and fracture .
- (2) Pain at site.

b. Three types of external hemorrhage

Show Slide #4

- (1) Arterial - Bright red/spurting
- (2) Venous - Dark red/steady flow
- (3) Capillary - Dark red/oozing

c. Field Treatment

Demonstrate using trainee as 'casualty'

- (1) Direct pressure.

Example: POI Part II – Teaching Guide (Continued)

(a) If bleeding continues, place another dressing on top of the saturated one.

(b) Do not remove old dressing, this may break the blood clot.

(2) Elevation

(3) Arterial pressure points

(4) Tourniquet - use as last resort

(a) Apply 2 to 4 inches above the wound.

(b) Place a T, time and date, on forehead and tourniquet area.

(c) Treat for shock

Ask trainees questions to ensure they understand the material presented.

CONCLUSION (3 min.)

SUMMARY: *Today we covered:*

1. Triage
2. Casualty Assessment
3. External Hemorrhage

REMOTIVATION: *Hopefully, you'll never have to use the skills you were taught today. However, if the situation dictates, rest assured you may save a fellow comrade's life. On the other hand, they may be the one to save your life.*

CLOSURE: *As applicable*

APPLICATION: *Trainees apply SABC after instruction and throughout encampment activities. Refer to [Attachment 1](#) for SABC application.*

Example: POI Part II – Teaching Guide (Continued)**ATTACHMENT 1****SELF AID AND BUDDY CARE APPLICATION EXERCISE**

Objective: Given a casualty in a field setting, perform basic first aid.

Mission: Divide flights into teams of 10. The team must assess and apply field dressings to wounds given a specific battle injury/symptom scenario. The team will select a team leader to brief the rest of the trainees on their scenario and their actions to treat the victim. The entire group will critique the response.

Victim: Hemorrhage victim – external bleeding; lower leg (Supplies: Bandage/T-shirts)

Triage Category: Minimal (Green)

Signs and symptoms:

- a. Capillary (dark red/oozing) bleeding from lower leg

Response:

- a. Elevate limb.
- b. Try direct pressure first (clean material or heel of hand or fingers).
- c. If direct pressure does not work, then try compression of pressure points (compress femoral artery against pelvis with the heel of your hand).
- d. As a last resort ONLY, try the tourniquet.
- e. Tourniquet must be at least 2 inches wide.

Example: POI Part II – Teaching Guide (Continued)

f. Place it around the limb between the wound and the heart approximately 2-4 inches above the injury – NEVER directly on the wound.

g. Tie a knot.

h. Pass a stick under the loop.

i. Twist the stick enough to stop the bleeding.

j. If you cannot feel a pulse, the tourniquet pressure is sufficient.

k. Tie the stick in place.

l. Do not loosen or disturb.

m. Leave the tourniquet exposed and mark a "T" on the victim's forehead and indicate the time the tourniquet was applied.

Section B

Develop Media

Introduction

In the Design Phase, you selected the training method and media that best suit your training needs. In this phase, you will develop the media. Media is used to enhance transfer of learning by presenting instruction that appeals to many senses, while contributing to the smooth flow of information. Regardless of the media selected, it is essential that you develop a quality product since it is the means of communicating instructional information to trainees.

Examples

Examples of media range from slides, videotapes, audiotapes, films, overhead transparencies, charts, graphs, maps, Interactive Courseware, etc.

Factors in media development

Several factors affect the development of training media. The relative importance of each of these factors depends on the type of media selected. Development factors are:

Personnel
Time
Cost

Development activities

Development of training media requires many activities to be performed. The type and number of these activities depend upon the type of media being developed. Some of the most common development activities follow.

**Development activities
(Continued)**

Medium	Development Activity
Print	Draft/write material. Edit material. Number materials to correspond to lesson they support. Publish material.
Slides/Transparencies	Draft slide/transparency. Generate slide/transparency. Number slide/transparency to correspond to placement in lesson . Reproduce slide/transparency.
Videotape/film	Storyboard/script tape/film. Shoot and edit tape/film. Narrate audio. Produce tape/film.
Interactive media (CBT)	Storyboard/script. Develop graphics. Narrate audio. Program/code computer.

Who is responsible?

Developing media normally involves teamwork and requires various skills. Curriculum developers are responsible for planning, scheduling, and making sure the media get produced and support the subject matter. Team members required for production of different media follow .

**Who is
responsible?
(Continued)**

Medium	Development Role
Print	Subject matter experts (SME) Curriculum developer Editor Graphic artist
Slides/Transparencies	SMEs Curriculum developer Graphic artist Editor
Videotape/film	Script writer SMEs Videographer/director Sound technician Editor
Interactive media (CBT)	Script writer SMEs Graphic artist Computer programmer

**Effective
instructional
design**

To ensure media are instructionally sound, make sure they:

- Are developed to support the objectives.
- Meet the design that was specified in the Design Phase.
- Guide trainees toward mastery of the behavior specified in the objective with proper stimuli and reinforcement.
- Target the trainee audience and their vocabulary level.
- Are uncluttered, easy to understand, and straight to the point.

Section C

Prepare Trainee Materials

Introduction

Once a plan of instruction (POI) and media are prepared, accompanying trainee materials may be developed. If POIs are revised, trainee materials must be updated to reflect these changes. Trainee materials consist of any written materials or graphics given to trainees for use during a course.

Purpose

Trainee materials may serve a number of purposes:

- A guide covering what is being presented in the course.
- A study guide that trainees can refer to and follow during the course.
- A job aid that trainees can take with them upon graduation.

Contents

There are different types of trainee materials used in support of BMT:

Trainee materials may contain the instructional content of academic subjects. For example, lesson material pertaining to military studies is contained in BMT Manual II. The materials contain all of the information contained in POIs, but at a much more detailed level. Whereas POI Part II may be presented in a bulletized fashion for the instructor to fill in the gaps, trainee materials contain all of the information pertaining to a particular subject that supports accomplishment of an objective.

Trainee materials may contain graphics, photographs, and illustrations used to explain points. These may be the same media used by the instructor during the class.

Trainee materials may contain review exercises the trainee may complete to test his knowledge of the subject matter.

Trainee materials may include supplemental materials such as handouts to prepare for a class, answer keys to quizzes, additional reading and reference materials (e.g., technical manuals, charts, graphs, maps), and instructions for participation in a practical exercise.

Preparing/revising materials

When preparing or revising trainee materials, ensure they:

Support POIs.

Are organized and sequenced by the POIs they support.

Are easy to understand and follow.

Use labeled graphics, photographs, tables, and charts that illustrate the teaching points.

Target the trainee audience and their vocabulary level.

Section D

Validate Training Materials

Introduction

Prior to implementing training, it must be validated to ensure the training materials are effective. Validation is conducted to ensure materials train and measure those skills and knowledge necessary for job performance. Validation assesses the effectiveness of instruction while it is being developed with the intention of improving it. It is a process of repetitive cycles of development, tryouts, and revision until evidence shows that the instruction is effective.

When should validation be done?

When possible, validation is done as segments, units, or blocks of instruction are developed or revised. If only a single lesson plan has been revised, it may be validated with the next iteration of the course. However, it is best to wait until all of the materials have been developed before determining its effectiveness.

Where to read about it

This section covers three topics.

Topic	Page
Develop Validation Plan	163
Conduct Technical Accuracy Reviews	164
Conduct Operational (Field) Tryouts	166

Develop Validation Plan

Introduction

For a training program to be effective, adequate planning should take place in the initial stages of training development. A part of that planning is the validation plan, which details how the program or subsets of the program will be validated. A validation plan provides curriculum developers and instructors with a roadmap for validating the instruction. A validation plan provides organization and credibility to the validation process.

Who is responsible?

Validation planning is the responsibility of managers within the organization or the design team. This responsibility is often delegated to curriculum developers since they often provide much of the information that goes into the validation plan such as the validation schedule and number of tryouts to be conducted .

Validation plan contents

Validation plans may contain information such as:

- Course title and number.

- Reason for validation (minor changes to lesson plans, new equipment, etc.) .

- Validation schedule. Describe the period of validation including start and end dates.

- Description of materials to be validated (e.g., objectives, method, media, tests, lesson plans).

- Validation procedures including:

 - Who will conduct the validation.

 - How data will be collected (surveys of instructors, trainees, etc.; test data; recycle and elimination data; observation data).

 - Number of tryouts to be conducted.

 - Number and availability of trainees to be used in the tryouts .

Conduct Technical Accuracy Reviews

Introduction

The technical accuracy review is the first step of validation. This review identifies inaccuracies and weaknesses in the materials under review so they may be corrected. Materials should be thoroughly reviewed since this may be the last opportunity to revise draft materials before they are tried out on trainees. If possible, conduct technical accuracy reviews each time instruction is developed, updated, or revised .

Who should review?

Internal reviews should be conducted by:

- SMEs
- Curriculum developers
- Instructors

An individual selected to conduct a review should be:

- Knowledgeable of training design and development.
- Subject matter expert.
- Objective and constructive critic.

What should be reviewed?

Instructional materials to be reviewed include, but are not limited to:

- Objectives
- Test items
- Lesson plans
- Media (e.g., slides, films, videotapes, transparencies)
- Storyboards/scripts
- Trainee materials
- CBT

How to conduct a review

Training materials must be reviewed for accuracy, completeness, and quality. The materials must be cross-checked against data sources such as technical orders, regulations, directives, and checklists. A job aid may be used to assist in this review. An example follows.

How to conduct a review (Continued)**Sample Job Aid for Technical Accuracy Review**

1. Is the content of the material accurate?
2. Is the material current?
3. Is the material complete?
4. Is the material free of errors?
5. Does the sequence of the material maximize learning?
6. Are the practice exercises adequate?
7. Does the material/lesson effectively teach the behavior specified in the objective ?
8. Is the objective adequately evaluated?
9. Can the materials be improved? If so, how?

During a review

When conducting a review, the reviewers should:

- Take careful notes.
- Make specific comments.
- Identify weaknesses in the materials.
- Recommend ways to improve the materials.

After a review

After the review:

- Discuss review findings.
 - Determine what revisions or changes should be made to the materials.
 - Decide the best way to make the necessary corrections to the materials.
 - Curriculum developers make revisions and changes to the materials, as applicable .
-

Conduct Operational (Field) Tryouts

Introduction

Once materials have been revised as a result of technical accuracy reviews, materials may be validated through operational (field) tryouts. There are a variety of methods for validating instruction. The most powerful method is conduct of a field tryout. In this method, training materials are presented to the actual target audience under normal operating conditions.

Why field tryout and not some other method?

In many validation methods (e.g., individual trials, small group tryouts), trainees representing the target audience are selected for participation in the validation prior to implementation of the program or revised materials. The entry-level BMT environment is unique in that it is not possible to select members representing the target audience because there is not access to the civilian population that makes up the audience. Therefore, a field tryout is conducted using actual trainees currently enrolled in BMT. In this case, validation and implementation of the new training are conducted concurrently. If revisions to the materials are identified during validation, they will be made before the official approval of the training materials.

Purpose

The purpose of field tryouts is to:

Determine if the training program actually works under operational conditions.

Provide feedback from the target audience to base final revisions or refinements to the training program.

Work out any implementation or operational problems to include equipment, training aids, facilities, and instructor preparation.

Trainee selection

To ensure a valid sample, select three flights from three separate squadrons to participate in the validation. This provides a cross-reference of trainees in environments shaped by different instructors and the general atmosphere of different squadrons. Having a varied selection will produce more reliable results.

Collect data

You may collect data in support of a field tryout using a variety of methods:

- Survey questionnaires completed by trainees, instructors, SMEs, curriculum developers
- Observation of validation
- Trainee test data (written and performance tests)
- Interviews with trainees and instructors

These data collection tools are used to measure each component of the training program (e.g., content, sequence, media, time, instructor performance, environment) against a predetermined standard.

Types of data

The following data may be gathered as part of the field tryouts.

Trainee data

Trainee data are collected to determine the attitude of trainees when they are presented the instruction, particularly anything they felt kept them from mastering the objectives. You may ask trainees specific questions regarding :

- Length of instruction.
- Difficulty of instruction.
- Interest/motivation level.

Throughout validation, instructors, as well as SMEs and curriculum developers (if possible), should observe trainees to collect data on:

- Difficulty or ease with specific material or practical applications.
- Questions trainees ask.
- Injuries.
- Trainee remediation.
- Trainee washbacks and eliminations.

Training material data

Information on the effectiveness of the training material should be gathered from instructors, SMEs, curriculum developers, and trainees. The most valuable information will come from instructors; SMEs and curriculum developers can also provide valuable insight through observation of training. Collect data regarding the effectiveness of:

Lesson plans (classroom and practical application)
Trainee materials
Media

Test item data

Test items should be analyzed to assess their validity (they measure what they are supposed to measure) and their reliability (they measure the same variables every time they are administered). This is done through a process called test item analysis (detailed procedures for conducting this analysis are presented in [Chapter 8](#), Section C). Item analysis will identify which test items need to be revised or rejected. In support of validation, the 737 TRSS Course Evaluation Element (TSDE) conducts test item analysis after two administrations of the tests.

Training procedures data

Information on the effectiveness of the training methods and procedures should be gathered from instructors, SMEs, curriculum developers, and trainees. The most valuable information will come from instructors; SMEs and curriculum developers can also provide valuable insight through observation of training. Collect data regarding the effectiveness of:

Training method
Training sequence
Training time
Training setting (e.g., classroom, field environment, drill pad)
Training equipment
Instructor presentation
Number of instructors

Example

A partial example questionnaire used to collect validation data follows .

Example: Questionnaire to Collect Validation Data

BASIC MILITARY TRAINING COURSE MATERIAL VALIDATION SHEET			
VALIDATOR:	INSTRUCTOR:	DATE:	
LESSON TITLE:			
START TIME:		STOP TIME:	
TRAINING METHOD:			
REASON FOR VALIDATION: <input type="checkbox"/> NEW SUBJECT IN COURSE <input type="checkbox"/> NEW MATERIAL IN SUBJECT <input type="checkbox"/> NEW/CHANGED OBJECTIVES <input type="checkbox"/> NEW METHOD OF TEACHING <input type="checkbox"/> PERIODIC VALIDATION <input type="checkbox"/> REQUESTED BY _____ <input type="checkbox"/> OTHER: _____			
* Where appropriate, provide further detail in comment section			
Area of Interest	YES	NO	N/A
1. Objective(s) stated			
2. Training material flow was sequential			
3. Time allotted sufficient to cover lesson thoroughly			
4. Trainee questions indicated: a. They understood the objectives b. The lesson provided sufficient detail c. The lesson was written at the appropriate level			
5. Trainees had the appropriate materials to complete the lesson			
6. Presentation contained personalization that should be in the LP			
7. The training method was: a. Appropriate b. Effective c. Confusing			
8. Is the LP and BMTM accurate?			
9. Visual Aids were: a. Clear b. Accurate c. Necessary d. Supportive of the lesson/BMTM e. Free of any discriminatory information.			

Example: Questionnaire to Collect Validation Data (Continued)

10. Demonstration was: a. Applicable b. Accurate c. Understandable d. Satisfactory/Appropriate e. Complicated			
11. Application was: a. Applicable b. Accurate c. Understandable d. Necessary e. Satisfactory/Appropriate f. Complicated			
12. Trainees were: a. Interested b. Inattentive c. Dissatisfied d. Confused e. Bored			
13. Was the instructor prepared to teach the lesson?			
14. Explain applicable no/yes responses and instructor comments/suggestions/recommended changes:			

Analyze data

Once the operational tryouts have been conducted, you will analyze the data gathered during the tryouts. Analyze the data to determine:

- Effectiveness of training materials in enabling mastery of objectives .
- Average time it took to complete each lesson or segment of a lesson .
- Areas of the instruction deemed by trainees as weak, confusing, non-motivating, too difficult, or too easy.
- Effectiveness of training environment, equipment, and number of instructors to support objectives.
- Revisions to training materials, environment, equipment, and instructor requirements.
- Priority for accomplishing revisions or changes and plan of accomplishment.

If the training or materials require significant revisions or changes, it is recommended that additional field tryouts be conducted to determine if the revisions were effective. As with other forms of validation, continue to try out, and revise as long as the quality of the training program is improved.

(Additional information on analyzing data is covered in [Chapter 8](#).)

Report results

Document any actions to be taken to improve the training program in a validation report. The validation report should be completed within 30 calendar days of completion of the validation. The validation report should include :

- A summary of the validation process to include flights and squadrons .
- Any known resource constraints during validation.
- A summary of significant findings to include trainee performance and adequacy of the training program.
- Conclusions and corrective actions to include specific recommendations for improving the program .

(Additional information on reporting data is covered in [Chapter 8](#).)

Section E

Finalize Training Materials

Introduction

After you have validated the training, you must finalize the training materials. During this step, you make sure that all necessary changes are made to the training materials to ensure they are complete, current, and accurate.

When should training materials be revised?

All revisions to training materials are coordinated with the 737 TRSS Course Development Element (TSDC). Recommended changes will be submitted in writing using the following guidelines:

- State the suggested change or update.
- Explain the reason for the change or update.
- Explain the objective that the change or update meets.
- Describe the impact of the change or update.
- Indicate if the change or update is safety driven and why.

If the change requires immediate implementation, such as for safety or welfare reasons, TSDC will make the revisions to the materials. If the change does not require immediate implementation, TSDC will hold the suggestion for consideration during the next annual review.

What needs to be updated?

When finalizing training materials, update:

- Plans that have been developed.
 - Course control documents.
 - Training materials.
 - Training media.
-

Quality checklist

The following list of questions can assist in ensuring all materials have been updated to reflect the data gathered in the validation.

Training Material	Questions
Course Training Plan	Has the CTP been updated? Is the CTP complete? Has the CTP been approved? Has the CTP been distributed, as required?
Course Training Standard	Has the CTS been revised/changed? Has the CTS revision/change been approved?
Plan of Instruction	Has the POI been updated? Is the POI complete? Has the POI been approved? Has the POI been published and distributed?
Training Materials	Printed materials: Have the trainee workbooks been updated? Are the trainee workbooks complete? Have the trainee workbooks been published? Audiovisual: Have the transparencies/slides been updated? Are the transparencies/slides complete? Are the transparencies/slides ready for use? Interactive courseware: Has the program been updated? Is the programming complete? Has the ICW been operationally tested?

File materials

Lesson plans must be maintained and filed. TSDC will maintain the CTP (including the CTS and Course Chart) and four master lesson plan sets contained in separate volumes:

Master Lesson Plan Set A will consist of curriculum taught in the first and fourth blocks of training (processing, orientations, drill, and dormitory).

Master Lesson Plan Set B will consist of curriculum taught during the third block of training (Warrior Week).

Master Lesson Plan Set C will consist of curriculum taught in the second block of training (academic lessons that are evaluated during the end-of-course test).

Master Lesson Plan Set D will consist of curriculum taught in the Prior Service Sister Service Enlistee (PSSSE) Orientation Course.

Maintain a master copy of each academic written test with answer sheet and correlation between each objective and test item.

Change pages

Any revisions to training materials must be recorded on change pages. Change pages are filed in the appropriate Master Lesson Plan and instructor's lesson plan with the most current change page on top. An example change page follows.

Example: Change Page

1 December 2000

MEMORANDUM FOR 737 TRG AND 433 TRS CURRICULUM MONITORS

FROM: 737 TRSS/TSDC

SUBJECT: Lesson Plan Change Memorandum (Change 1)

1. Make the following changes to LMABM9T000 Basic Military Training Lesson Plans, dated 1 September 2000.

AREA	ACTION
POI Part II, Dust Cover Bed, pg 2, para 3c(1)	Replace foot with head C1 ----- *Example: Grasp the side of the sheet approximately 12 inches from the foot end of the mattress. head C1
POI Part II, Dorm Guard, pg. 9, para 6e(2)	Replace the individual crosses the threshold with you open the door. C1 ----- *Example: (2) Depending on the gender of the individual entering the dorm, you will loudly shout, "Lady or Gentleman entering the Dorm." The trainees inside the dorm will echo the same statement. This needs to happen before the individual crosses the threshold. you open the door. C1

NOTE: File this memorandum in front of the Lesson Plan before the filing sequence page.

2. Direct questions or concerns to 737 TRSS/TSDC, ext. 3-4271.

SIGNED
 JANE J. DOE, MSgt, USAF
 Chief, Course Development

Chapter 7

IMPLEMENTATION

Overview

Introduction

For training implementation to be effective, you must have done your job well in the Planning, Analysis, Design, and Development Phases of ISD. The work you do there sets the stage for how well the training program will be executed. As a BMT curriculum developer, your role in implementation will be limited. The primary role is played by Military Training Instructors (MTI) and their ability to impart the training materials to the trainee audience.

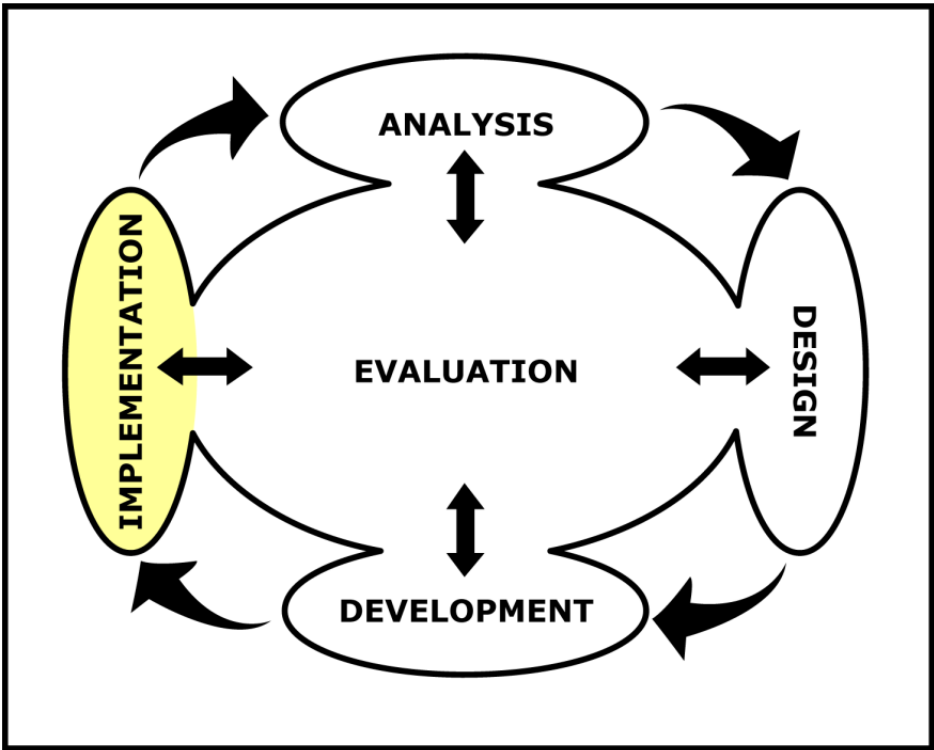
BMT curriculum developers' role in implementation

Your role during implementation will consist of a support role. Your primary function is to ensure training materials are accurate and ready for implementation. Once the course is implemented, you will periodically conduct an operational evaluation to ensure the course continues to operate effectively and cost-efficiently and to produce graduates who can meet the job performance requirements (see [Chapter 8](#)).

Where are you in the process?

An ISD model with the Implementation Phase highlighted is presented in Figure 10 to help you visualize where you are in the ISD process.

Figure 10 Implementation Phase



Objectives

The objectives of this chapter are contained in two sections.

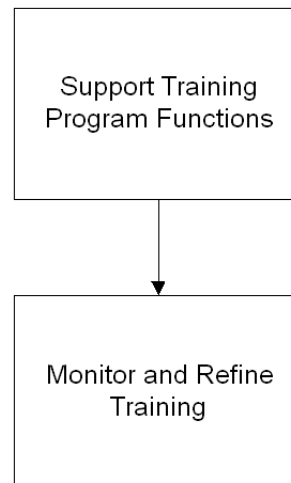
Section	Title	Page
A	Support Training Program Functions	179
B	Monitor and Refine Training	186

**Implementation
process flowchart**

The Implementation Phase of ISD is depicted in the flowchart (Figure 11) below as a quick reminder of the activities involved in the implementation process.

Figure 11 Implementation Process Flowchart

Implementation



Section A

Support Training Program Functions

Introduction

Because your role is critical to the overall success of the training program, you should understand the functions in place to support, implement, and maintain the program. Program functions can be divided into management, support, administration, and delivery. This section discusses each of these functions.

Where to read about it

This section covers four topics.

Topic	Page
Management Function	180
Support Function	182
Administration Function	184
Delivery Function	185

Management Function

Introduction

Every individual within the training organization has certain management responsibilities. For example :

Instructors manage the teaching/learning activity.

Instructors' supervisors manage the scheduling of courses and ensure instructors are available and properly trained.

Curriculum developers manage development of the training materials .

Management activities

The management function controls the day-to-day implementation of training. As a curriculum developer, you may provide input into how these functions are being carried out, particularly the evaluating and reporting functions. The management function includes :

Organizing	Organizing the resources to include identifying, arranging, scheduling, and bringing together resources such as personnel, equipment, and facilities required to implement the training program .
Coordinating	Establishing lines of communication with supporting organizations such as resource management, civil engineering, and logistics to ensure availability of resources.
Evaluating	Reviewing training and materials for accuracy, currency, and availability (see Chapter 8).

**Management
activities
(Continued)**

Reporting	<p>Reporting status and progress of the training program to management and other organizations involved.</p> <p>Providing briefings on status of courses and course development projects.</p> <p>Reporting evaluation results such as course reviews, self-inspections, course validation, and summative and operational evaluations.</p> <p>Reporting any identified training deficiency.</p> <p>(Chapter 8 covers the reporting function from the curriculum developer's standpoint.)</p>
------------------	--

Support Function

Introduction

You can design, develop, and implement an outstanding training program, but without the necessary support, it will not be effective nor cost-efficient. The support function for BMT already exists. The structure is there and training support activities are actively supporting the program. Each time a new course is developed or an existing course is revised, support requirements must be identified. You identified support requirements early in the ISD process. During implementation, your role is limited to identifying any support deficiencies you observe that affect delivery of the training .

Definition

The support function includes long-range as well as day-to-day tasks performed by training support organizations in order to implement and maintain the training program. Examples of support functions are :

Maintaining equipment and facilities.
Supplying equipment and materials for the course.
Providing services such as engineering, visual, and publication.

Examples of training support task s Various support organizations perform many tasks in support of the training program. Examples of training support tasks follow.

Organization	Examples of Tasks
Civil Engineering	Constructs training and support facilities such as classrooms, drill pads, and ranges. Modifies existing facilities such as adding new electrical outlets and air conditioning.

**Examples of
training support
tasks (Continued)**

Organization	Examples of Tasks
Resource Managemen t	<p>Provides human resources such as instructors and maintenance personnel .</p> <p>Manages training and support equipment.</p> <p>Provides funding for day-to-day operation.</p> <p>(Note: As a curriculum developer, you may be tasked with coordinating with Resource Management to ensure facilities and equipment are ready for trainees.)</p>
Information Managemen t	<p>Curriculum developers edit and produce training material such as trainee handbooks and plans of instruction.</p>
Maintenance Organization	<p>Performs quality assurance inspections on training and support equipment.</p> <p>Performs scheduled and unscheduled maintenance on training and support equipment .</p>
Visual Information	<p>Develops and controls visual material such as slide and filmstrips.</p> <p>Manages visual equipment such as televisions, VCRs, and slide projectors .</p>
Technology Suppor t	<p>Maintains facilities and equipment.</p> <p>Supplies equipment and instructional course materials.</p> <p>Provides services such as network engineering, courseware revision and maintenance, publication, etc .</p>

Administration Function

Introduction

The administration function maintains documents such as equipment, supply, and trainee records. As a BMT curriculum developer, you may not be involved in any administrative activities. However, you should still be aware of what is being done on a daily basis by other organizations to support and maintain the training program. The administration function should be in place before successfully implementing a training program. For example, the training materials must be produced and available, trainees must be scheduled and tracked, and health and welfare concerns must have been addressed.

Administration activities

Administration includes activities such as:

Provide administrative support for documents such as training standards, plans of instruction, lesson plans, and trainee workbooks .
Maintain personnel, training, and equipment records.
Track trainee data. BMT curriculum developers play an important role in tracking trainee performance data (see [Chapter 8](#)).

Delivery Function

Introduction

The delivery function is largely the purview of MTIs. You supported this function during design and development of the training program by ensuring the appropriate delivery method was selected and training materials were ready to function prior to implementation.

Supporting presentation

During implementation, MTIs use presentation techniques that promote effective learning. As a curriculum developer, you were instrumental in this process by designing and developing training materials that:

Maximized the similarity between the training environment and the job setting.

Contained objectives that were sequenced from simple to complex .

Provided trainee practice through practical applications.

Built in progress checks and question periods to provide feedback and elicit participation.

Ensuring readiness

At this point, the delivery function should be fully developed and operational. Validation will have given an indication of the suitability and readiness of the training program; however, prior to implementation, managers, MTIs, and curriculum developers work together to ensure everything is ready. The following questions must be answered:

Are there adequate instructors to support the training requirements ?

Have the instructors been qualified, and are they certified to deliver the instruction?

Are training materials available in adequate quantities to support training?

Are trainee workbooks printed in adequate numbers?

Is the necessary training and support equipment available and operational such as computers, projectors, and weapons?

Have slides and/or transparencies been produced?

Are training facilities ready and operational?

Section B

Monitor and Refine Training

Introduction

During implementation, curriculum developers monitor and refine training as necessary. Curriculum developers have the responsibility to ensure that deficiencies identified during operation are corrected and all materials are updated as necessary.

Monitoring training

Curriculum developers have a vested interest in BMT. A lot of work went into the analysis, design, and development of the training materials. Therefore, curriculum developers can readily identify anything, such as deficiencies in equipment, facilities, or instruction, that does not support the training program as designed. For example, instructors are not allowed to change the training at will. They must follow the plan of instruction (POI). Anything the curriculum developer observes that is in violation of the course training plan or POIs should be noted and reported.

Evaluation during implementation

During implementation, curriculum developers continually conduct operational evaluations to ensure the program continues to operate effectively and cost-efficiently, producing graduates who can meet job performance requirements. Evaluation maintains the quality of the training program because necessary revisions are identified and made by curriculum developers to improve the program. ([Chapter 8](#) covers operational evaluation extensively.)

Chapter 8

EVALUATION

Overview

Introduction

Evaluation is a continuous process throughout each phase of ISD. The purpose of planning and conducting evaluation is to determine the effectiveness and efficiency of a training program. A training program is effective when it allows mastery of objectives that are based on job requirements; and efficient when it makes the best use of resources (e.g., personnel, time, funding, equipment, supplies). BMT curriculum developers are responsible for planning and conducting evaluations.

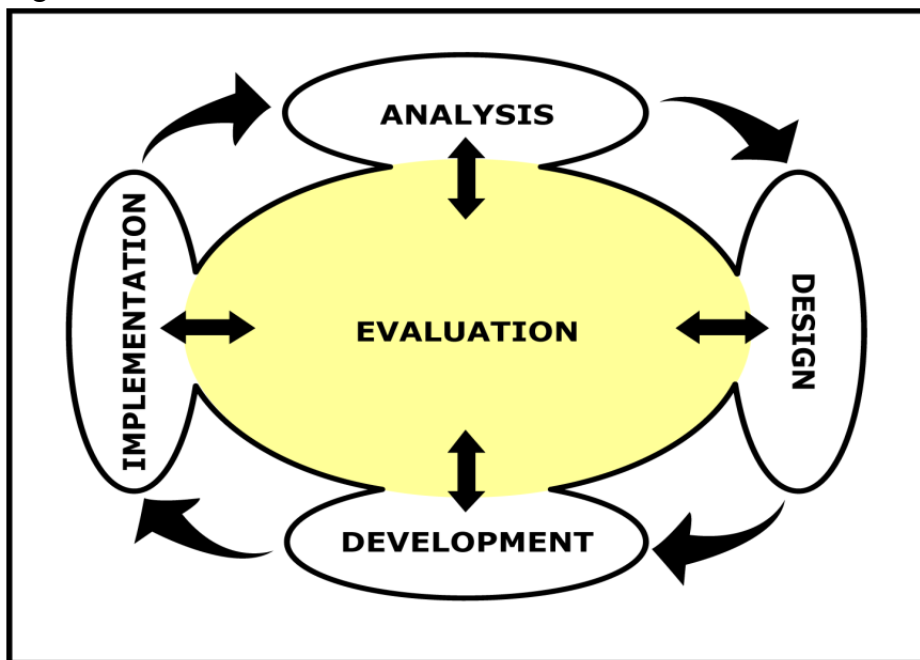
Purpose

There are three types of evaluation. The purpose of this chapter is to present the procedures for conducting an operational evaluation. Formative and summative evaluations are covered in [Chapter 6](#), Section D

Where are you in the process?

An ISD model with the Evaluation Phase highlighted is presented in Figure 12 to help you visualize where you are in the ISD process. As depicted in the model, each stage in the ISD process involves evaluation activities.

Figure 12 Evaluation Phase



Objectives

The objectives of this chapter are contained in four sections.

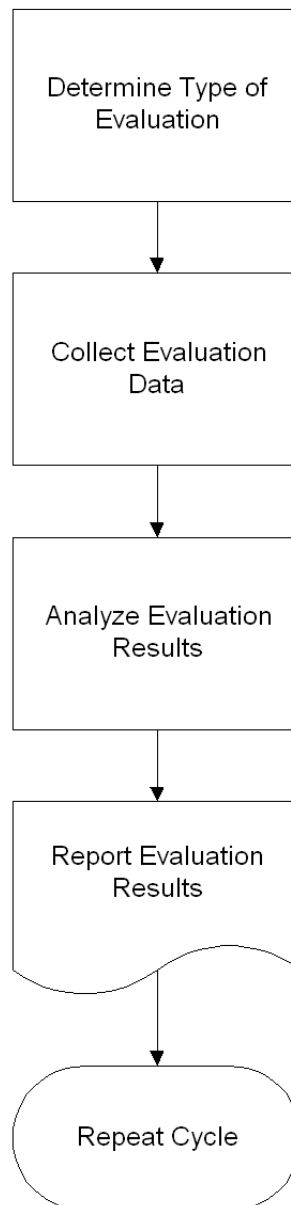
Section	Title	Page
A	Types of Evaluation	190
B	Collect Evaluation Data	193
C	Analyze Evaluation Results	211
D	Report Evaluation Results	219

**Evaluation process
flowchart**

The Evaluation Phase of ISD is depicted in the flowchart (Figure 13) below as a quick reminder of the activities involved in the evaluation process.

Figure 13 Evaluation Process Flowchart

Evaluation



Section A

Types of Evaluation

Introduction

There are three types of evaluation. The distinction among the types can be made by determining when the evaluation is being conducted and the focus of the evaluation. All three types of evaluation are conducted for newly developed training materials as well as when significant revisions or updates have been made to an existing training program.

Formative evaluation

Formative evaluation is conducted during the development or revision of a training program. Within BMT, formative evaluation consists of technical accuracy reviews of the training materials. Formative evaluation is the method used to validate training materials prior to implementing the program (see [Chapter 6](#), Section D).

The primary focus of formative evaluation is to review the effectiveness and efficiency of course materials and to make any revisions prior to implementation.

It does not focus on evaluating trainee performance.

It will only rarely assess training environment and instructor performance.

Summative evaluation

Summative evaluation involves trying out the instruction on the target audience in an operational environment. Within BMT, summative evaluation consists of operational field tryouts conducted on selected flights currently undergoing BMT to determine the "summed" effect of the instruction under operational conditions. Summative evaluation is one of the methods used to validate training materials (see [Chapter 6](#), Section D).

**Operational
evaluation**

Once a training program or revisions to a training program are made and the program is implemented and starts producing graduates, it is time to begin conducting operational evaluation. Operational evaluation is a continuous process that assesses how well course graduates are meeting established job performance requirements. Operational evaluation is designed to gather and analyze internal and external feedback data to ensure the training program continues to effectively and cost-efficiently produce graduates who meet established training requirements .

**Evaluation
activities**

The focus of an operational evaluation further dictates the activities that will take place in the evaluation. There are two types of activities:

- Internal evaluation
- External evaluation

**Internal
evaluation**

Internal evaluation focuses on evaluating the training program internally through instructor comments, trainee critiques, and test results. The focus of this evaluation is on identifying revisions that may be made to improve the program. Internal evaluations are scheduled events that take place a specific number of times annually. In addition, no-notice internal evaluations are conducted. Anyone can make suggestions to improve BMT curriculum at any time.

An internal evaluation can focus on one or all of the following:

- Training materials
- Trainee performance
- Instructor performance
- Training environment

External evaluation External evaluation focuses on evaluating the training program externally from the field through survey questionnaires and inspection and evaluation reports. The focus of this evaluation is on identifying whether graduates are meeting established job performance requirements. This evaluation activity relies on input from the field (i.e., outside the BMT environment) to determine how well graduates are performing.

The purpose of external evaluation is to determine if recent graduates of the course :

- Can meet job performance requirements.
- Need all of the instruction they received.
- Need any instruction they did not receive.

Who conducts external evaluation?

External evaluation is typically done by gathering data from graduates' operational commands regarding graduate performance on the job. However, BMT is unique because it seeks to impart pervasive attitudes, values, and general knowledge required of all airmen. The knowledge, skills, and attitudes acquired do not support a specific job. The knowledge acquired by graduates of BMT is general and often only an orientation to a particular subject is provided. Graduates of BMT report directly to technical training (TT) where they will receive specific Air Force Specialty Code (AFSC) training. Therefore, rather than operational commands, external evaluation is formally conducted at the TT schools where graduates report following BMT.

External evaluation is also informally conducted by members of the operational forces and identified needs are communicated through BMT Reviews or Out of Cycle Requirements (see [Chapter 3](#)). In fact, the purpose of BMT Reviews is to evaluate BMT materials to ensure they are meeting the needs of the operational forces.

Section B

Collect Evaluation Data

Introduction

Data collection is an important aspect of evaluation to ensure what is being collected is accurate and to ensure it can be used to assess the objectives your evaluation seeks to measure.

Focus of evaluation

The type of data collected and the methods used will depend on the focus of your evaluation. An operational evaluation can focus on:

- Trainee performance
- Instructor performance
- Training materials
- Training environment
- Graduate performance

Data collection methods

Data are collected using different methods. The data collection method chosen will depend on the data collected and from whom those data will be collected.

Data Collected	Data Collection Method
Internal Evaluation	Data collected from trainees, instructors, curriculum developers :
Trainee Performance	Test results, both written and performance tests (development of tests is covered in Chapter 5)
Instructor Performance	Questionnaire Observation*
Training Materials	Questionnaire Observation*
Training Environment	Questionnaire Observation*
External Evaluation	Data collected from Technical Training representatives:
Graduate Performance	Questionnaire Observation*

* Observation is almost always supported by questionnaire data.

Trainee test results	Trainee performance provides the most direct measure of training program effectiveness. A trend of excellent or poor trainee performance may indicate a need to evaluate the training program as a whole to determine if the course trains and measures what it should. Trainee test results are provided via written tests and performance tests. (Chapter 6 provides details on how to collect data through tests.)
Observation	Data concerning trainee and instructor performance can be effectively gathered via observation. Trainee performance is observed by instructors during the conduct of practical applications and performance tests (see Chapter 6). Instructor performance can be observed by supervisors, peer instructors, and trainees during instruction. Observations are not conducted alone; they should always be supported by questionnaire data or performance test data. Observations may be recorded in response to questions on a survey. They may also be recorded on a checklist during or immediately following the observation; performance test data are recorded on checklists (see Chapter 6). An example checklist for evaluating instructor performance through observation follows.

Example: Military Training Instructor Evaluation

MILITARY TRAINING INSTRUCTOR EVALUATION			DATE
INSTRUCTIONS: Comments are highly encouraged for instructor feedback. Any overall rating of "not met" will require a follow-up evaluation within 30 days.			
GRADE AND NAME OF INSTRUCTOR <i>(Last, First, Middle Initial)</i>	ORGANIZATION	TIME STARTED	TIME COMPLETE D
GRADE AND NAME OF EVALUATOR	COURSE	SUBJECT	
A. PREPARATION			
Lesson plans available and current		Information on board	
Training aids available prior to start of class		Trainees properly positioned/seated	
COMMENTS/RECOMMENDATIONS			
B. INTRODUCTION			
Attention		Motivation	
Overview/Objective clearly stated		Transition	
COMMENTS/RECOMMENDATIONS			
C. WHOLE IMPRESSION			
DRILL: Commands		Drill: Look for	
Stage		Perform	
Requirements		Dorm: Set Stage	
Represent		Properly displayed	
COMMENTS/RECOMMENDATIONS			
D. BODY - EXPO DEMO			
All main points covered		Use of training aids	
Transitions		Voice quality (pitch, rate, volume)	
Eye contact		Instructor poised, enthusiastic, confident	
Movement, hand gestures		Questioning technique	
Verbal distracters		Skills properly introduced and demonstrated	
COMMENTS/RECOMMENDATIONS			

Example: Military Training Instructor Evaluation (Continued)

E. APPLICATION/EVALUATION			
Helping trainees when needed		Encouraging, positive feedback	
Appropriate corrections			
COMMENTS/RECOMMENDATIONS			
F. CONCLUSION			
Summary		Closure	
Remotivation		Time Management	
COMMENTS/RECOMMENDATIONS			
G. PERSONAL QUALITIES			
Appearance		Distraction control	
Command Voice		Subject matter knowledge	
Professionalism		Safety	
COMMENTS/RECOMMENDATIONS			
OVERALL EFFECTIVENESS			
WAS OBJECTIVE: <input type="checkbox"/> EXCEEDED <input type="checkbox"/> SATISFACTORILY ATTAINED <input type="checkbox"/> NOT MET			
COMMENTS/RECOMMENDATIONS			
NAME, GRADE, AND TITLE OF INSTRUCTOR		SIGNATURE	DATE
NAME, GRADE, AND TITLE OF EVALUATOR		SIGNATURE	DATE
NAME, GRADE, AND TITLE OF EVAL SUPERVISORS		SIGNATURE	DATE
FOLLOW UP EVALUATION			
<input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY			

Example: Military Training Instructor Evaluation (Continued)

COMMENTS/RECOMMENDATIONS		
EXAMPLE		
NAME, GRADE, AND TITLE OF INSTRUCTOR	SIGNATURE	DATE
NAME, GRADE, AND TITLE OF EVALUATOR	SIGNATURE	DATE

Questionnaires	A questionnaire is a data collection instrument consisting of a printed form containing a set of questions used to gather information from respondents. Questionnaires collect subjective, qualitative data on respondents' opinions about specific topics. Questionnaires are effective, cost-efficient evaluation tools.
-----------------------	--

Advantages	Advantages of questionnaires include: They are comparatively inexpensive to administer. They can be used to collect large samples of data. They yield data that can be easily tabulated and reported. Respondents give their opinions freely.
-------------------	---

Disadvantages	Disadvantages of questionnaires include: Low return rates and inappropriate responses affect accuracy. They collect only opinions, which may not be as reliable as other methods of collecting data. Communication is one-way; respondents may not understand some of the questions.
----------------------	---

Focus of data collection	Different questionnaires are developed depending on the focus of the evaluation and from whom data will be collected. Questionnaires may be used to collect data on the following :
---------------------------------	---

Training program. Trainees complete a Block I survey during the second week of BMT. Trainees further complete a Block IV survey during the sixth week of BMT. The surveys provide feedback in the areas of processing, motivation, services, training environment, instructor performance, and overall attitudes toward BMT. In addition, a Trainee Comment Sheet is available to trainees throughout BMT; trainees may complete the questionnaire at any time.

**Focus of data collection
(Continued)**

BMT graduate performance. The Airman Performance Survey (APS) is a web-based survey used to evaluate the quality of BMT graduates during Technical Training (TT). TT academic instructors (AI) and military training leaders (MTL) complete a survey rating the airman on specific traits exhibited during TT.

Focus of evaluation	Distribute questionnaires to:
Instructor Performance	Trainees, instructors
Training Materials	Trainees, instructors, graduates
Training Environment	Trainees, instructors
Graduate Performance	AIs, MTLs

Guidelines for writing questions

Guidelines for writing effective questions are:

Word questions to the respondent's level of understanding; use vocabulary and concepts for which the respondent can relate.
 Limit each question to one aspect of a topic.
 Avoid questions that show biases or exceptions.
 Word questions so they will not threaten respondents.

Methods of recording responses

There are two primary methods of recording responses on a questionnaire: rating scale and open-ended responses .

Rating scale

A rating scale method of recording responses typically involves a selection of possible answers corresponding to a spectrum of responses for a specific topic. Respondents check the response that corresponds to the intensity of their judgment of the topic. This method makes data analysis easier, but it may not give the range of answers desired.

Example:

The organization of the instruction was:

___ Very helpful
 ___ Helpful
 ___ Not very helpful

Open-ended responses

Open-ended questions allow respondents to provide additional comments, descriptions, and rationale for their answers. These questions are useful for collecting data pertaining to the perceived effectiveness of a training program. However, analyzing and quantifying these data are difficult because a specific response cannot be selected.

Example:

What subjects would you add or delete from BMT?

Preparing questionnaires

Well-constructed questionnaires that are properly administered are extremely important to the evaluation process. Consider motivational factors when developing questionnaires. You want respondents to answer fully and conscientiously. To motivate respondents, questionnaires should:

Explain the purpose of the questionnaire.

Tell respondents how they can benefit from answering the questionnaire.

Provide space for the respondent's name, title, organization, and location, as applicable.

Contain clear and concise instructions for completing the questionnaire. This includes specific descriptions for responding to rating-scale questions.

Be formatted so they appear uncluttered and easy to answer. For example, arrange rating scale responses vertically rather than horizontally.

Correct

Yes ____

No ____

Incorrect

Yes ____ No ____

Arrange questions in a logical order or group them under a common topic heading.

Be numbered on each page.

**Example
questionnaire --****Trainee reaction to
BMT**

During BMT, trainees complete questionnaires regarding their impressions of BMT and the Air Force. In addition, topics include questions rating how trainees were treated when they arrived at Lackland, clothing issue, job processing, living quarters, etc. The example questionnaire that follows contains some typical questions asked of trainees regarding the effectiveness of a training program.

Example: Trainee Course Critique

Flight/Squadron # _____ Date _____ Course _____

Section I

Instructions: Provide responses to the following questions by checking the block associated with the choice that is closest to your impressions. Your responses will help us to improve the course and ensure that trainee needs are being met.

1. What is your attitude today toward basic training?
☐ Highly Favorable
☐ Favorable
☐ Neutral
☐ Unfavorable
☐ Highly unfavorable
2. Is your training being conducted in a professional and dignified manner?
☐ Yes
☐ No
3. Overall, how would you rate your military training instructors (MTI)?
☐ Professional all the time
☐ Mostly professional
☐ Neutral
☐ Mostly unprofessional
☐ Extremely unprofessional
4. What type of language has been used in your training on a regular basis?
☐ Professional all the time
☐ Mostly professional
☐ Neutral
☐ Mostly unprofessional
☐ Extremely unprofessional
5. How would you rate the physical fitness program?
☐ Excellent
☐ Good
☐ Neutral
☐ Poor
☐ Extremely poor

Example: Trainee Course Critique (Continued)

6. How would you rate your marching/drill instruction?

- ☐ Excellent
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Extremely poor

7. How effective do you think the basic training you received will be in enabling you to perform job-related duties?

- ☐ Extremely effective
- ☐ Effective
- ☐ Neutral
- ☐ Ineffective
- ☐ Extremely ineffective

8. Did the amount of practice/practical application allowed help you meet course objectives?

- ☐ Yes
- ☐ No

Section II

Instructions: Provide your comments on the following as they relate to the course. Your input will be useful in determining if revisions need to be made to the course.

1. What classes were the most interesting or useful? Why? _____

2. Would you add or delete any training from the course? _____

3. What other comments or recommendations can you make about the course? _____

**Example
questionnaire --****BMT graduate
performance**

BMT graduates are evaluated on their performance by AIs and MTLs during TT. The example questionnaire that follows contains some typical questions for rating airmen on specific traits exhibited during TT.

Example: BMT Graduate Performance

Airman's name/SSN _____
Location/Organization _____ Date _____
Name of Evaluator _____

Section I

Instructions: Your responses will help us improve BMT to meet the needs of the Air Force operational forces. Rate the airman on the following criteria, on a scale from 0 - 100:

1. _____ How well the airman consistently gives a reporting statement
2. _____ Wear of the uniform
3. _____ Personal grooming/military image
4. _____ Military bearing
5. _____ Respect for authority
6. _____ Demonstrated respect for other students
7. _____ How well the airman follows simple instructions
8. _____ How well the airman demonstrates the three core values
9. _____ Confidence and pride in what he/she does
10. _____ How well the airman demonstrates teamwork
11. _____ Performance in dormitory inspections
12. _____ Performance in the fitness program
13. _____ Compliance with weight and body fat standards
Did the airman arrive within body fat standards? yes/no (circle one)
Is the airman currently within body fat standards? yes/no (circle one)

Section II

On a scale of one to five, with one being poor and five being exceptional, how would you rate this airman overall? _____

Guidelines for preparing cover letters

Each questionnaire should have a cover letter. When developing the cover letter, ensure it:

Explains the purpose of the questionnaire and its importance to improving instruction.

Includes a statement that assures the respondent that the information will be treated confidentially .

Includes a statement that the evaluation is being conducted per AFI 36-2201.

Indicates the approximate time required to complete the questionnaire .

Indicates a recommended return date.

Uses appropriate letterhead signed by a responsible authority.

Distribution of questionnaires

Distribution of the questionnaire is a critical aspect of ensuring you collect reliable and accurate data. Within BMT, questionnaires completed by trainees and TT representatives are completed via the internet.

Questionnaires completed by instructors are completed in person and submitted to BMT curriculum developers. When distributing the questionnaire, you should:

Select a representative sample of your target audience (e.g., trainees, instructors, MTLs) to ensure valid results.

Determine how many questionnaires you need to distribute. That decision is based on:

Expected response rate.

Level of confidence (a statistical consideration which means the size of the sample required for you to be, say, 95 percent sure the sample truly represents the larger population). The sampling chart on the following page shows how to determine the number of questionnaires you need based on this consideration.

Determine when to distribute the questionnaires. Currently within BMT, trainees complete questionnaires regarding the BMT program during the second and sixth week of BMT. TT representatives complete questionnaires regarding graduate performance during the third or fourth week of TT.

Example: Sampling Chart

SAMPLING CHART				
Members of Target Audience (during sampling period)	Sample Size 95% Confidence*	Sample Size 90% Confidence	Sample Size 80% Confidence	
10	10	10	9	
20	19	19	18	
40	36	35	32	
60	52	49	44	
80	67	62	54	
100	80	73	62	
120	92	83	69	
160	114	101	81	
200	133	115	90	
250	154	130	99	
300	171	142	106	
350	187	153	112	
400	200	161	116	
450	212	169	120	
500	222	176	123	
600	240	186	129	
700	255	195	133	
800	267	202	136	
900	277	208	139	
1,000	286	213	141	
1,500	316	229	148	
2,000	333	238	151	
2,500	345	244	154	
3,000	353	248	155	
3,500	358	251	157	
4,000	364	253	157	
4,500	367	255	158	
5,000	370	257	159	
10,000	383	263	161	
25,000	394	268	163	
100,000	398	270	164	
* It is recommended that the 95% confidence level be chosen. This is the level commonly used in business and education decisions.				

**How to use the
sampling table**

The sampling table can be used as shown in the following example :

Annual course production is 4,000 and you desire a 95%* confidence level. Estimated return rate of usable questionnaires is 85%. From the table, 364 usable questionnaires are required. Therefore, this figure should be 85% of the questionnaires to mail out. The number of questionnaires to distribute is computed as follows:

$$\frac{85\%}{100\%} = \frac{364}{X}$$

$$X = \frac{364 \times 100}{85} = 428 = \text{number of questionnaires to distribute}$$

**Job aid for
collecting data**

A job aid may be used to focus your evaluation efforts. The job aid that follows contains questions you should ask as you think about structuring an evaluation effort.

Example: Job Aid for Collecting Data

Focus of Data Collection	Check
Trainee Performance	
Are trainees mastering the objectives?	
What sections or tasks do trainees have difficulty with?	
What are trainee recycle and elimination rates?	
Are trainee test results consistent over time?	
Instructor Performance	
Are instructors teaching according to the POI and course syllabus?	
Do instructors use media properly?	
Do instructors effectively respond to trainee needs?	
Are instructors adequately trained and have adequate knowledge of the subject matter?	
Training Materials	
Do the POIs and course chart reflect what is being taught in the course?	
Are the POIs and course chart current and accurate?	
Are there any discrepancies between the planned course (course control documents) and the course that was actually implemented?	
Do training materials support the POIs?	
Do tests adequately measure the objectives (reliable and valid)?	
Can improvement be made in the course?	
Is there sufficient time allotted for training and practice?	
Are the condition, operation, and appropriateness of media adequate?	
Are trainee materials such as study guides and workbooks adequate and available?	
Are test integrity measures in place to prevent tests from being compromised ?	

Example: Job Aid for Collecting Data (Continued)

Focus of Data Collection	Check
Training Environment	
Do support facilities meet program requirements?	
Are facilities adequately maintained?	
Do training and support equipment/supplies meet program requirements ?	
Are equipment and supplies adequately maintained?	
Does the training environment facilitate maximum learning?	
Is the training environment appropriate to the subject matter and realistic to the job setting ?	
Are adequate numbers of instructors available?	
Graduate Performance	
Are job performance requirements correctly identified within the program ?	
Do objectives reflect job performance requirements?	
Are tasks not being taught that should be taught at the BMT level?	
Are tasks being taught that are not important to the job?	
Do graduates of the course believe non-essential training is contained in BMT?	

Section C

Analyze Evaluation Results

Introduction	Once evaluation data are gathered, they must be analyzed and their results interpreted. Evaluation results must be carefully analyzed to assess student mastery of objectives and to identify instructional proficiencies and deficiencies so that the training program can be constructively revised.
Computer vs. manual data analysis	Some simple statistical analyses may be performed manually. However, a computer statistical analysis package allows powerful statistical analyses to be performed to analyze evaluation results. Although you will probably use a computer package to perform statistical analysis, this section of the handbook will cover how to manually conduct some of these analyses so you understand the reasons why certain analyses are performed and how they are performed.
Determining mastery learning	The Air Force uses criterion-referenced testing. It is the most reliable method because it compares trainee performance to some clearly defined criterion for mastery (i.e., objective based on job performance requirement). In criterion-referenced testing, a trainee is given a score of mastery (pass) or of nonmastery (fail). For example, the academic written test within BMT requires a score of 70% to pass the test.
Types of data	There are two types of data collected, which affect how analysis and interpretation of the data will be performed.
Quantitative data	Quantitative data are objective in nature and characterized by generating numbers that are suitable for analysis by comparison measures. Quantitative data are gathered by written and performance tests and focus on observable behavior.
Qualitative data	Qualitative data are subjective in nature and focus on opinions or concepts rather than measurable facts. Qualitative data are gathered by survey questionnaire, interviews, and observation .

**Quantifying
evaluation data**

Most data can be quantified, that is, assigned a number. Quantifying evaluation data allows numbers to be assigned and comparisons of statistical analysis to be performed to analyze and interpret the data.

Written tests

Quantitative written test data come from written test items (e.g., multiple-choice, fill-in-the-blank, true/false). These data can be analyzed by assigning a value of '1' to a correct answer and a '0' to an incorrect answer. Matching and listing types of test questions can assign each selection a point value so credit is given to partially correct answers. The test item scores for each trainee can then be summed to produce a total written test score for each trainee.

Performance tests

Performance tests typically have a checklist the evaluator completes during or following observation of trainee performance. These checklists typically evaluate performance of a task on a pass/fail basis. Each task or subtask on a performance checklist may be quantified by assigning a '1' to a passed item and a '0' to a failed item. Scores can then be summed to produce a total performance test score for each trainee.

Survey data

Responses to open-ended survey questions can not be quantified. Because the range of responses can vary so greatly, it is not possible to assign a specific number to responses.

Survey questions using a rating scale may be quantified by assigning a number to each response if responses range across a continuum. For example:

The organization of the instruction was:

_____ very helpful
_____ helpful
_____ not very helpful

A '1', '2', and '3' may be assigned to each response (1=not very helpful, 2=helpful, 3=very helpful). An average score representing the average response to the question may then be calculated: Add the ratings for all responses to the question and divide by the total number of trainees responding to the question. For example, upon analyzing the data, the mean value of class responses was 2.8, indicating an overall impression that the organization of instruction was very helpful.

Descriptive statistics

Descriptive statistics are basic statistics that are useful for explaining results, making comparisons, and looking for trends. Often, when reporting results, you will use descriptive statistics. Some useful descriptive statistics follow.

**Descriptive
statistics
(Continued)**

Frequency	<p>Frequency is determined by counting the number of occurrences. Frequencies may be used to report:</p> <p>The number of trainees who obtained a particular score on a test or who got a particular test question correct.</p> <p>The number of respondents who answered 'a' on a particular test question.</p> <p>The number of people who completed a survey questionnaire. For example, you may report that 281 academic instructors completed a survey out of the total population of 367 who received the survey.</p>
Percentage	<p>A percentage is calculated by dividing a subset number of occurrences from the total number of occurrences. Percentages may be used to report:</p> <p>The percentage of trainees who passed a test and the percentage who failed.</p> <p>The percentage of people who answered 'a' on a particular test question.</p> <p>The percentage of trainees who rated their attitude of BMT as 'highly favorable'.</p> <p>The percentage of people who completed a survey questionnaire. For example, you may report that 76.5% of academic instructors completed surveys by dividing the subset (281 who completed survey) by the total population (367 who received survey).</p>

**Descriptive statistics
(Continued)**

Median	A median is the score that half the trainees score at or below. It is useful for determining a "breaking score" which splits the class in half.
Mean	<p>Mean is the average of all scores or responses. Mean is calculated by adding all of the scores or responses and dividing this by the number of trainees or respondents. Mean may be used to report:</p> <p>The average score on a test.</p> <p>The average response to a rating scale question on a survey .</p> <p>The average rating of BMT graduates.</p>

Test version data

More than one version of a written test must be maintained -- one primary version and at least one version for retesting trainees who fail. Different versions of tests must be compared to ensure they measure the same objectives. Compare average (mean) scores of different test versions to ensure trainees are not having difficulty with one test version over another.

Test item analysis

Item analysis is a set of methods used to evaluate the effectiveness of test items. The analysis of trainee test scores can reveal much about a training program's effectiveness and can indicate a need to evaluate one or more aspects of the program. The 737 TRSS Course Evaluation Element (TSDE) performs a complete test item analysis of BMT academic written tests on a monthly basis. The basic method of item analysis involves an assessment of test item difficulty and discriminability.

Item difficulty

Item difficulty is the number of trainees who get a particular test item correct, generally expressed in a percentage (e.g., if 20 out of 100 trainees answer the item correctly, the difficulty level is .20 or 20%).

$$\frac{\text{number of trainees who get item correct}}{\text{total number of trainees who answered item}} = \text{item difficulty}$$

The more trainees who get the test item correct, the higher the percentage, and the easier the test item; the more trainees who get the item incorrect, the harder the test item (high miss). If the difficulty level is close to 1 (too easy) or to 0 (too hard), the test item should be altered or discarded because it is not testing the differences among test takers' abilities or knowledge. A difficulty level of .50 truly discriminates among test takers with different skill levels. However, the difficulty level will depend on the type of test item being used. Probability of answering a test question by guessing must be figured into the equation. The table below presents acceptable item difficulty values for different test item types.

Test Item Difficulty	
Test Item Type	If the item difficulty value falls within this range, it is a good test item:
One-answer item (e.g., fill-in-the-blank)	.30 - .70
Multiple choice item with 5 responses	.40 - .80
Multiple choice item with 4 responses	.43 - .83
Multiple choice item with 3 responses	.47 - .87
True/False item	.55 - .95

Item Discriminability

Another way to evaluate test items is to examine the relationship between performance on individual test items and performance on the whole test. This is known as discriminability. This assessment will determine if trainees who have done well on specific test items have done well on the whole test. It provides a comparison between trainees who have done well on the test with trainees who have not done well.

For example, test scores of trainees in the top 25% of the class can be compared with scores from the bottom 25% of the class. (The percentage chosen for evaluation can be anywhere between 10% and 33%.) The difference between these proportions of high scoring and low scoring trainees is the discrimination index. To perform item discriminability:

1. Identify the % of trainees in the high scoring group (top 25% of class) and the % in the low scoring group who got a particular test item correct.
2. For each test item, subtract the % of correct responses for the low scoring group (L) from the % of correct responses for the high scoring group (H). This gives the item discriminability (D).

Item #	H	-	L	=	D
1	.89		.34		.55
2	.76		.36		.40
3	.98		.45		.53
4	.98		.88		.10
5	.56		.74		-.18

Interpreting Item Discriminability:	
If the value is between:	Interpret as:
.50 - 1.00	Very good item
.30 - .49	Reasonably good item but possibly subject to improvement
.10 - .29	Marginal item needing improvement
negative value	Poor item

Trend analysis

Analysis of data can reveal patterns or themes that emerge over time. These trends should be assessed to determine if there are significant reasons why these patterns keep showing up. A trend can focus subsequent evaluations of a particular topic to determine solutions to improve the training program.

Data from surveys can reveal trends such as a particular response to an open-ended question reported by many respondents.

Data gathered over time (e.g., several evolutions of a training program or survey questionnaire) can reveal trends. These data can include information on the effectiveness of training materials, test items, trainee recycle and elimination rates, and ratings of BMT graduates.

Data gathered for one topic from many sources can also show trends. These types of data include information collected from many different sources on the effectiveness of instructor performance, course materials, training environment, and trainee performance .

Data gathered from one source (e.g., one trainee's responses to a written test or survey) may also indicate trends that you should be aware of because they will affect your analysis of the data:

Halo effect - indiscriminate rating of all items positively. This is generally seen on responses to survey questions.

Central tendency - indiscriminate rating of items in the center of the scale. This may be seen on responses to survey questions or written tests.

Section D

Report Evaluation Results

Introduction

After completing data analysis, you must report your findings. You may provide results in the form of an Evaluation Report or in a briefing.

**Evaluation report
or briefing**

An Evaluation Report or briefing should include information such as:

- Background information on the course that was evaluated.
- Scope of the evaluation.
- Significant analysis results.
- Specific recommendations for improving the program.
- Milestones for corrective actions, if applicable.

BMT Review

If recommended revisions to the training materials or program do not require immediate implementation, the 737 TRSS Course Development Element (TSDC) will hold recommendations for consideration until the next BMT Review. TSDC will report suggested curriculum changes and updates to the BMT Review Committee to include the following :

- Lesson
- Lesson title
- Proposed/implemented change
- Original content (may be listed as an attachment)
- Reason for change

**Reporting via
narrative text**

Qualitative data, such as those gathered through open-ended survey questionnaires and observations, are generally summarized in paragraph form. However, quantitative data may also be reported via narrative text. A concise paragraph should focus on what was evaluated and why, and it should describe the findings of the evaluation and, if possible, recommendations for future action. For example:

Of 235 trainees surveyed, 187 felt their BMT experience was 'favorable'.

85% of BMT graduates demonstrate the Air Force's three core values.

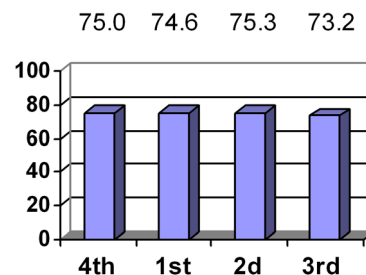
80 out of 100 trainees passed the written test.

80% of trainees passed the written test.

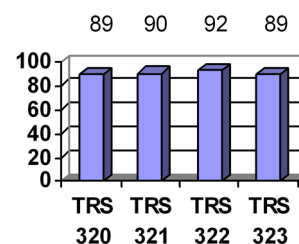
**Reporting via
graphs**

Quantitative data, such as test scores, can best be summarized in graphic form. Survey data may also be 'quantified' by assigning numbers, ratings, and percentages to the data. Some examples follow.

% of trainees rating BMT as 'highly favorable/favorable', by quarter:

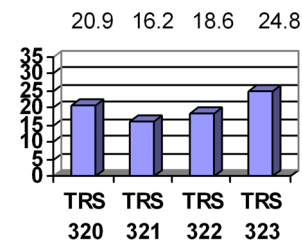


Ratings of Military Training Instructors as 'highly professional', by squadron :

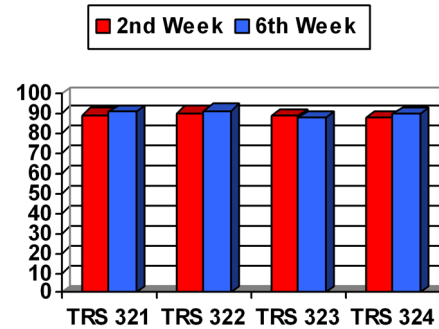


Reporting via graphs (Continued)

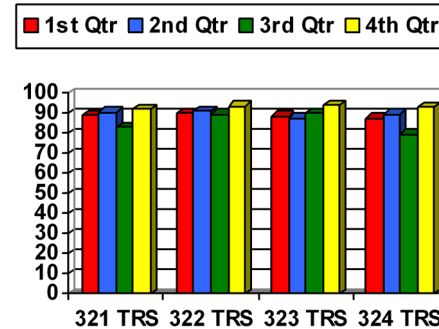
% of trainees failing (<70%) the academic test in the 3rd quarter, by squadron :



% of trainees rating BMT as 'highly favorable/favorable', by squadron and week of training



Average academic test scores, by squadron and quarter:



Reporting via tables Quantitative data, such as test scores, are also effectively summarized in tables. An example follows.

Written Academic Test Results						
Year	# Tested	# Failed	% Failed	# Retested	# Failed	% Failed
1998	32608	1777	5.45	1783	109	6.11
1999	33695	2044	6.10	1960	150	7.11
2000	37402	1017	2.72	1015	94	9.26

**Revising the
training program**

Any revisions to BMT curriculum must be approved by 737/TRG/CC. Once any revisions identified by the evaluation are approved, you must correct the deficiencies in the program. Revisions resulting from evaluation may require reentry into an earlier phase of the ISD process to correct the problem(s). The need to reenter an earlier phase of ISD is determined by the nature and scope of the revision. For example, changing a test item would require you to reenter the Design Phase of ISD.

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

AETCI 36-2203	Technical and Basic Military Training Development
AFH 33-337	The Tongue and Quill
AFH 36-2235	Information for Designers of Instructional Systems (12 Volumes)
Vol 1	ISD Executive Summary for Commanders and Managers
Vol 2	ISD Automated Tools/What Works
Vol 3	Application to Acquisition
Vol 4	Manager's Guide to New Education and Training Technologies
Vol 5	Advanced Distributed Learning: Instructional Technology and Distance Learning
Vol 6	Guide to Needs Assessment
Vol 7	Design Guide for Device-based Aircrew Training
Vol 8	Application to Aircrew Training
Vol 9	Application to Technical Training
Vol 10	Application to Education
Vol 11	Application to Unit Training
Vol 12	Test and Measurement Handbook
AFI 36-2201	Air Force Training Program
	Vol 1, Training Development, Delivery, and Evaluation
	Vol 2, Training Management
	Vol 3, On-the-Job Training Administration
	Vol 4, Managing Advanced Distributed Learning (ADL)
	Vol 5, Career Field Education and Training
	Vol 6, Total Force Training and Education Review Process (TFTERP)
AFI 36-2301	Professional Military Education
AFI 36-2605	Air Force Military Personnel Testing System
AFMAN 36-2234	Instructional System Development
AFMAN 36-2236	Handbook for Air Force Instructors
AFPD 36-22	Military Training

737 TRGI 36-3

- Vol 1 Basic Military Training
 - Vol 2 Charge-of-Quarters (CQ) and Noncommissioned Officer of the Day (NCOD) Duty
 - Vol 3 Key and Additional Trainee Positions
 - Vol 4 Personnel Recognition Programs
 - Vol 5 Operations Officer Procedures
 - Vol 6 Basic Military Training Rules of Conduct
- Faculty Development and Master Instructor Program

737 TRG
Supplement 1,
AETCI 36-2202

Technical Training Development

737 TRG
Supplement 1,
AETCI 36-2203

BMTM II

Basic Military Training Manual II (Military Studies)

Abbreviations and Acronyms

AETC	Air Education and Training Command
AETCI	Air Education and Training Command Instruction
AF	Air Force
AFH	Air Force Handbook
AFI	Air Force Instruction
AFJMAN	Air Force Joint Manual
AFMAN	Air Force Manual
AFPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
AFSC	Air Force Specialty Code
AI	Academic Instructor
APS	Airman Performance Survey
BDU	Battle Dress Uniform
BMT	Basic Military Training
BMTM	Basic Military Training Manual
CCAF	Community College of the Air Force
CBT	Computer-Based Training
CTP	Course Training Plan
CTS	Course Training Standard
DoD	Department of Defense
FM	Field Manual
FTX	Field Training Experience
IAW	In Accordance With
ICW	Interactive Courseware
IG	Inspector General
ISD	Instructional Systems Development
LAFB	Lackland Air Force Base
LP	Lesson Plan
MAJCOM	Major Command
MEO	Military Equal Opportunity
MGIB	Montgomery GI Bill
MTI	Military Training Instructor
MTL	Military Training Leader
NLT	No Later Than

O&M	Operation and Maintenance
OT&E	Operational Test and Evaluation
PC	Progress Check
POI	Plan of Instruction
PSSSE	Prior Service Sister Service Enlistee
RH&T	Recruit Housing & Training
SABC	Self-aid Buddy Care
SME	Subject Matter Expert
STT	Squadron Training Time
TNA	Training Needs Assessment
TP	Transparency
TRG	Training Group
TRGI	Training Group Instruction
TRS	Training Squadron
TRSS	737 th Training Support Squadron
TRW	Training Wing
TSDC	737 TRSS Course Development Element
TSDE	737 TRSS Course Evaluation Element
TT	Technical Training
TTMS	Technical Training Management System
USAF	United States Air Force
VCR	Video Cassette Recorder
WOT	Week of Training

Terms

The following list of definitions includes those terms commonly used in Basic Military Training as they relate to instructional systems development and as used in this handbook. The list is not to be considered all-inclusive .

Administration Function. Responsible for the maintenance of documents such as equipment, supply, and trainee records. The administration function should be in place before successfully implementing a training program.

Attitude. A feeling or emotion toward a fact or state. Attitudes must support Air Force philosophy and policies for conduct. An attitude is often what is needed to achieve desired outcomes. Also see Knowledge and Skill.

Behavior. The activity the trainee is expected to demonstrate following training. A behavior must be written in measurable, observable terms so trainee performance can be objectively evaluated.

Computer-Based Training (CBT). A training method that uses computers to aid in the delivery and management of instruction. CBT, also referred to as interactive courseware (ICW), involves trainees interacting, at their own pace, to instruction presented through a variety of media controlled and monitored by a computer.

Condition. Conditions set forth the real-world or wartime circumstances in which the task is to be performed. Conditions describe the situation, equipment, and resources needed to perform the task on the job and the assistance, location, safety considerations, etc., that relate to performance of the task.

Course Chart. A qualitative course control document that states the course identity, length, and security classification, lists major items of training equipment, and summarizes the subject matter covered .

Course Control Documents. Specialized publications used to control the quality of the training program. Examples are training standards, plans of instruction, and course charts.

Course Training Plan (CTP). A document that provides the basis for planning, programming, and implementing training. It is the justification that describes the training program in terms of purpose, type of training, training design, training content, course parameters, and resources required.

Course Training Standard (CTS). A document that indicates the learning outcome and level of learning required for each standard. A Proficiency Code Key explains these relationships.

Criterion. (a) The standard by which something is measured. (b) In test validation, the standard against which test instruments are correlated to indicate that accuracy with which they predict human performance in some specified area. (c) In evaluation, the measure used to determine the adequacy of a product, process, behavior, and other conditions.

Criterion Referenced Testing. Measures knowledge objectives, knowledge components of performance objectives, and performance objectives in sufficient quantity to provide an acceptable degree of confidence that the trainees have attained the required knowledge and skills. To ensure tests adequately measure objectives, the performance required in the test should match the performance required in the objective.

Demonstration. A training method that uses the presentation or portrayal of a sequence of events to demonstrate a procedure, technique, or operation; frequently used in conjunction with lecture. Demonstrations may include presentations of models, videos, maps, or a live demonstration by an instructor.

Educational Analysis. The process of reviewing educational requirements and developing educational goals .

Enabling Objective. An objective that trainees must attain in order to accomplish a terminal objective. Enabling objectives provide the level of detail necessary to describe the knowledge and skills that must be learned to demonstrate satisfactory performance of the terminal objective.

Evaluation. Procedure used to determine the effectiveness and efficiency of a training program to include the training materials, training setting, and performance of trainees, instructors, and graduates. Evaluation is a continuous process throughout each phase of ISD. It includes Formative Evaluation, Summative Evaluation, and Operational Evaluation.

External Evaluation. A process used to evaluate a training program externally from the field through survey questionnaires and inspection and evaluation reports. The focus of this evaluation is on identifying whether graduates are meeting established job performance requirements .

Formative Evaluation. An evaluation method used to validate training materials prior to implementing the program. Formative evaluation is conducted during the development or revision of a training program. Within BMT, formative evaluation consists of technical accuracy reviews of the training materials.

Guided Discussion. A training method that uses instructor-led interactions that involve participation by all trainees through a variety of exercises such as case study and role-playing. It is highly effective for analyzing, debating, exploring a topic, value, or attitude.

Instructional Systems Development (ISD). A deliberate and orderly, but flexible, process for planning, analyzing, designing, developing, implementing, and evaluating training programs. ISD ensures personnel are taught in a cost-efficient manner the skills, knowledge, and attitudes essential for successful job performance.

Intellectual Skills. Intellectual skills involve identifying, classifying, categorizing, using rules, solving problems, thinking, reasoning, analyzing, discriminating, evaluating, and judging.

Interactive Courseware (ICW). Computer-controlled training designed to allow the student to interact with the learning environment through input devices such as keyboards and light pens. The student's decisions and inputs to the computer determine the level, order, and pace of instructional delivery, and forms of visual and aural outputs.

Internal Evaluation. A process used to evaluate a training program internally through instructor comments, trainee critiques, and test results. The focus of this evaluation is on identifying revisions that may be made to improve the program.

Job Aid. A checklist, procedural guide, worksheet, or other device used by the worker to aid in task performance. Job aids reduce the amount of information that personnel must recall or retain.

Knowledge. The information required to develop the skills and attitudes for effective accomplishment of a step, task, or job. Knowledge involves storing and recalling information such as names, labels, facts, principles, nomenclature, steps, etc.

Learning. A change in the behavior of the learner as a result of experience. The behavior can be physical and overt, or it can be intellectual or attitudinal .

Learning Analysis. The process of analyzing the real-world tasks performed on the job and translating them into behaviors performed in the training environment. Learning analysis involves establishing learning outcomes in terms of types of learning involved and level of learning desired.

Learning Objective. A statement that defines the real-world task behaviors and knowledge modified to fit the training environment, that describe precisely what the trainee is expected to do, under specified

conditions, and to a specified standard. A learning objective is stated in terms of what trainees must be able to do at the end of training.

Lecture. A formal or semiformal oral presentation of information delivered by an instructor. Primarily used to impart verbal information and intellectual skills such as facts, concepts, problems, relationships, rules, and principles .

Lesson Plan. An approved plan for instruction that provides specific definition and direction to the instructor on learning objectives, equipment, instructional media material requirements, and conduct of training.

Media. The means used to communicate information. Media are selected to enhance, support, and supplement presentation of the instruction. Media can improve trainee attention during training and increase transfer of learning.

Motor Skills. Learned behaviors that involve the smooth coordinated use of muscles. Motor skills involve the performance of some activity that is directly observable.

Needs Analysis. The process of analyzing a need, problem, or deficiency in order to determine if the solution is training or non-training related.

Objective. A statement that specifies precisely what behavior is to be exhibited during training, the conditions under which behavior will be accomplished, and the minimum standard of performance. Objectives describe only the behaviors that directly lead to or specifically satisfy a job performance requirement.

Operational Evaluation. A continuous process after course implementation that assesses how well course graduates are meeting established job performance requirements.

Operational (Field) Tryout. A review in which training materials are presented to the actual target audience under normal operating conditions to identify inaccuracies and weaknesses in the materials. See also Summative Evaluation.

Performance Test. A test in which the trainee actually performs the skill required of the objective. A performance test is used to evaluate a performance objective.

Plan of Instruction (POI). The overall plan or blueprint for conducting training in a given course. POIs ensure training is standardized. The POI serves as a control document for planning, organizing, and conducting training.

Practical Application. A training method in which trainees apply previously learned knowledge or skills under controlled conditions with close instructor supervision. Trainees may interact with equipment, data, or persons, as necessary, to attain training objectives. This includes interaction with actual equipment or job materials.

Qualitative Data. Data that are subjective in nature and focus on opinions or concepts rather than measurable facts. Qualitative data are gathered by survey questionnaire, interviews, and observation.

Quantitative Data. Data that are objective in nature and characterized by generating numbers that are suitable for analysis by comparison measures. Quantitative data are gathered by written and performance tests and focus on observable behavior.

Resources. The supplies and support required to revise, design, develop, implement, and maintain a training program.

Self Study. A training method in which trainees review and study instructional materials designed for this purpose at their own pace.

Skill. The ability to perform a job-related activity that contributes to the effective accomplishment of a step or job.

Standard. Standards provide the proficiency level expected when the task is performed. The standard can cite a technical manual or doctrinal reference, or the standard can be defined in terms of completeness, time, and accuracy. It identifies the proficiency trainees must achieve when they perform the behavior under the specified conditions .

Subject Matter Expert (SME). (a) An individual who has thorough knowledge of a job, duties/tasks, or a particular topic, which qualifies him/her to assist in the training development process (for example, to consult, review, analyze, advise, or critique). (b) A person who has high-level knowledge and skill in the performance of a job.

Subtask. The groupings of work activities that, when combined, make up a task. Subtasks, or performance steps, specify the actions required to accomplish a task. They may also be defined as a series of actions leading to a terminal outcome.

Summative Evaluation. An evaluation method used to try out the instruction on the target audience in an operational environment. Within BMT, summative evaluation consists of operational field tryouts conducted on selected flights currently undergoing BMT to determine the "summed" effect of the instruction under operational conditions.

Support Function. The long-range as well as day-to-day tasks performed by training support organizations to implement and maintain the training program.

Target Audience. The total collection of possible users of a given training program. The persons for whom the training program is designed.

Task. An observable and measurable unit of work activity or operation that forms a significant part of a job. It constitutes a logical and necessary step in performance, and has a logical beginning and end.

Task Analysis. The process of breaking down tasks into subtasks (performance steps), conditions, and standards.

Tasking. Any formal request to develop new training or revise existing training.

Technical Accuracy Review. A review conducted to identify inaccuracies and weaknesses in training materials under review so they may be corrected. Also see Validation .

Terminal Objective. An objective that trainees will be expected to accomplish when they have completed the instruction. It may be supported by several enabling objectives.

Training. A set of events or activities presented in a structured or planned manner, through one or more media, for the attainment and retention of skills, knowledge, and attitudes required to meet job performance requirements.

Training Needs Assessment (TNA). The process of identifying a deficiency or gap between current performance and desired performance.

Transfer of Learning. The extent to which what is trained is carried over to the job. Training should strive to provide as realistic conditions as possible to the job to increase trainee retention of the material and maximize transfer of learning.

Validation. The assessment of the effectiveness of instruction while it is being developed with the intention of improving it. It is a process of repetitive cycles of development, tryouts, and revision until evidence shows that the instruction is effective. Validation is conducted to ensure materials train and measure those skills and knowledge necessary for job performance.

Verbal Information. The required information to develop the skills and attitudes for effective accomplishment of a step or task. Verbal information involves storing and recalling information and refers to the learning and recall of names, labels, facts, nomenclature, etc. The learning of knowledge is imparted through verbal information .

Written Test. A test that evaluates a trainee's knowledge of a subject. A written test is used to evaluate a knowledge objective.